Arithmaticke:

OR,

An Itroduction to learne to
reckon with the Pen, or
with Counters, in whole
Numbers or broken:

Newly ouer-seene and corrected.

Whereto is annexed certaine nota-
ble and pleasant Rules of false positi-
ons, not before seene in our
English tongue.

By which, all manner of difficile or
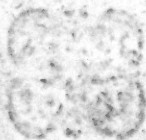hard Questions may easilie be
dissolued and assoiled.

LONDON,

Printed. 1629.

The earliest edition that I have seen of this work is one imprinted by John Awdeley, 1574. London. The title of Awdeley's Edition is: "An Introduction of Algorisme, to learn to reckon wyth the Pen or wyth the Counters &c" — the remainder of the title almost precisely the same as in this Copy.

To the Reader.

Hat arte and feate (deare Reader) whom Vtilitie and Neceſſitie both doe commend: needeth great lie of no other commendation: How profitable and neceſſary this feate of Algoriſme is, to all manner of perſons which haue reckonings or accounts, either to make, or els to receiue needeth no declaration. Neither is this Arte onely neceſſary to thoſe, but alſo in manner, to all manner of Sciences & Artificies. For what craft is that but it ſome time dooth occupie, not onely one part of this feate, but all the partes? And for becauſe that diuers rules in this booke, haue not beene in times paſt very commodiouſly expreſſed and ſet foorth, and many examples, moe then needed a great ſort coheaped together: therefore paine hath beene taken, both in the better and more clearer declaration and expreſſing of the ſayd rules, and alſo in the reſecting and cutting off diuers ſuperfluous and voyde things, rather hinderaunce to the dilligent Reader, then furtherance. Fur-

ther-

thermore, there is added the rules of false
positions, the which how conuenient and
profitable they be to the ready solution of
all harde and mistie questions : when ye
haue readde them, then iudge. Now then
ye shall vnderstand, that in this Art there
are two necessary and distinct parts to be
knowne, that is Numeration, Addition,
Subtraction, Multiplication, Partision,
Progression & Reduction. Of the which,
vij. hereafter shalbe singularly entreated,
of each of them in their Chapters. But I
aduertise you first to beginne at the first
part, and then successiuely to the second,
and so to the third, &c. Learning euery
part by it selfe exactly, as they bee sette
foorth in this booke. For if you leape to
the second part before you haue perfect-
ly the first, or to the thirde, before you
haue seene the second : you shall neuer
prosper nor profit in this Arte. *Vale.*

The

yet according to the quantitie of y place
they stand in, diuersly doth their signifi

Numeration is a manner of expres
sing of numbers, by certaine figures
which are called figures of Signification:
the which be ten, as in this example be
falling appeareth, which be the place

o figures in, for example, the figure
Of these ten, one be significatiue, the
tenth called a sipher, signifieng nothing
of it selfe, but onely set before, the other
significatiue figures, argumenteth their
signification. In Numeration by this
craste, ye must euermore beginne at the
right side of the hande, and so towards
the left side, as in this example

number
that the last place is the place of vnities.

This figure vnder a, standeth in the
first place, the vnder b, standeth in the se
cond place, and so foorth to the ende, so
that the vnder k, standeth in y last place.
By these ten figures all maner of num
ber possible to be excogitate, may clear
ly e plainly be expressed, which albeit,
that of them selfe they signifie but sim
ple and little number, as ye see afore,

yet according to the diuersitie of ẏ place
they stand in, diuersly doth their signi-
fication amount. Wherfore in Nume-
ration ye must note two things, the fi-
gure signification, and the place it stand
deth in, for the signification of ẏ figure,
dependeth vpon the number of the place
it standeth in. For example, this figure
8 standing alone, or in ẏ first place, sig-
nifieth but viij but if he stand in the se-
cond place, as here 80 he signifieth viij
times ten, which is called 4 score: if he
stand in the third place as here 800, he
signifieth viij hundreth, &c. Therfore
ye must know perfectly the signification
of euery place, before ye can perfectly
number, Wherefore vnderstande ye,
that the first place is a place of vnities,
so that any figure standing in that place,
signifieth no more, then when he stan-
deth alone. The seconde place is a place
of tens, the third is a place of hundreds,
The fourth place is a place of thou-
sands. The fifte place is a place of ten
thousands. The vj place a place of hun-
dreth thousandes. The vij place is of
thousand thousands, which is called a

myllion. The viij place is, of tenne myllions. The ix is a place of hundred myllions. The x of thousand myllions. The xi of ten thousand myllions. The xij of a hundreth thousandes myllions. The xiij of a thousande thousand myllions, and so forth infinitely euery place ensuing, signifieth ten times as much as the place going before. Thys must you know perfectly, what euery place giueth and signifieth: for the place giueth denomination, & the figure standing in the same place, expresseth how many of the same denomination is to be vnderstand, as in example yee shall more plainely perceiue.

In this summe 3400872619 this figure 2 standeth in the iiij place, now by your rule before, the iiij place is a place of thousands: then this figure 2 standing in the same place, giueth vs to wyt that it is ij thousand. Likewise this figure 8 standing in the vi place, now by your rule as afore, the vi place is of hundreth thousandes, then this figure 8 standing in that place receueth denomination of the place, & represen-

teth

seth so be a bis hundreth thousandes.
Likewise this figure 1 standeth in the
seconde place, & because the second place
is a place of tennes, therfore this figure 1
standing there, is bound to the signifi-
cation of the place, and so signifieth one
tenne. If a figure of 4 stoode there, it
should signifie iiij tens, that is fourty,
and so foorth. Then for a farther decla-
ration of the foresaid summe, & al other
lyke summes: This figure 9 standing
in the first place, signifieth but himselfe
which is ix. This figure 1 standing in
the seconde place, because the seconde
place is euer a place of tens, signifieth
one ten. The figure 6 standing in the
third place, because the thyrd place is
a place of hundrethes, dooth signifie vj
hundreth. The figure 2 in the iiij place
signifieth ij thousand. The figure 7
standing in the fift place, and that place
beeing a place of ten thousandes, signi-
fieth vij times ten thousande, which
is iij score and tenne thousande. The
figure 8 in the vj place signifieth viij
hundreth thousand. The cipher o that
standeth in the vij place, signifieth no-
thing,

thing, but onely maketh vp a place,
that the figures significative follow-
ing, may encrease their signification.
Like iudgement is of the other cipher
standing in the bij place. In the ir
place standeth the figure of 4 and this
place is a place of hundreth myllions,
therefore this figure 4 there signifieth
liij C. myllions. In the r place standeth
the figure 3 and this place is a place of
thousand myllions, therefore it signi-
fieth three thousand myllions. So the
whole summe is three thousand mylli-
ons, foure hundred millions, eight hun-
dred thousand, three score thousande,
twelue thousand, vi hundred and rir,
Now to exercise your selfe in Nume-
ration, number with your selfe these
summes following, as they be here set
foorth in thys Table. Which notyng it
well, it shall easely teach you bothe to
know the value of the places, and also
the summe of every figure.

The description of the Table folowing.

This Table (as you may see) hath
eight places, and in each of them
are

Of Numeration.

are set all the Digets, whose certayne
value is written on the right hand of
the Table, and the value vncertaine on
the least hand. So that hereby you may
learne how to expresse any number that
you will.

Billions	A thousan	A thousand	Thousands	Hundreths	Tennes	Vntties	The denomi-natours of the places of va-lue vncertain.
1	1	1	1	1	1	1	1	One.
2	2	2	2	2	2	2	Two.
3	3	3	3	3	3	3	Three.
4	4	4	4	4	4	4	Foure.
5	5	5	5	5	5	5	Fiue.
6	6	6	6	6	6	6	Sixe.
7	7	7	7	7	7	7	Seauen.
8	8	8	8	8	8	8	Eyght.
9	9	9	9	9	9	9	Nine.
0	0	0	0	0	0	0	Cipher
Eyght	Seuenth	Syxth	Fyft.	Fourth.	Thyrd.	Second.	Fyrst.	The order of the place.

The Table

Furthermore thou must note, that
there be in Algorisme three manner of
numbers, Diget number, Article, and
Compost.

The Diget number, is all manner of
numbers which are vnder x. as these.

1 2 3 4 5 6 7 8 9

The Article number is, al numbers
which are of x. as these.

10 20 30 40 50 60 70 80 90

The compounde number is all man-
ner of numbers, which are compounde
or made of the Diget and article toge-
ther, as followeth.

11 12 13 14 15 16 17 18 19
21 22 23 24 25 26 27 28 29
31 32 33 34 35 36 37 38 39

And so foorth of all other. This is suf-
ficient for the knowledge of number in
Algorisme.

The ende of Numeration.

The second part, called Addition.

Addition is a collection of divers and
sundry summes into one total sum,
which containeth as much in him as al

the

the other summes, being before set by.
In Addition are three numbers to bee
considered, the one is, the numbers
which must bee adioyned together, the
other is, the numbers which remayn-
deth of theyr addition together, which
otherwise is called the totall summe.

Then when ye haue many summs to-
gether, first write them fair, the one di-
rectlie vnder the other, so that the first
figure of the one, be right vnder the first
of the other, and the seconde vnder the
second, euery place correspondent vnder
other. That done, draw a line vnder all
these seueral summs, as is to see in the ex-
ample following. And when you will
adde your numbers together, begin at
the first places of your summs, and ad all
the figures that ye see in the first places
of all your summes together, and that
that commeth of the addition, whether
it be Diget number, Article, or Com-
post. If it be but Diget, set that Diget
beneath the line, directly vnder the same
first places. If it be Article, put a Ci-
pher beneath the lyne, right vnder the
same first place, and reserue the article

to bee added to the next places of thy
summe, and there as litle will. If it be
compound, set the Diget vnder the line,
right vnder the same places, & referre
the article in your minde, adding it like
to the rest of the next places of thy summe.
When the figures standing in the last
places of your summes be added to ge-
ther, if any article or articles then re-
main, set them downe next to the figure
ye set last before, vnder the same lyne,
as here for example.

The first summe, is 1 8 9 7 8
The second summe, . . . 5 4 3
The third summe, . . . 4 3 1
The fourth summe, . . . 7 8 9
The fift summe, ... 9 7 4
The sixt summe, ... 4 3 2

Summa totalis 8 9 6

Your figures sette after this sort, ad
all the figures that yee finde in the first
places of all the summes together, be-
ginning at the nethermost, saying, 2
5 is 7, and 4 that is 11, and 6 that is 17,
and 7 that is 24, and 4 that is 28. This
is

is the whole summe of the figures ad-
ded together , which be foundes in the
first places , the which number is com-
post. Wherfore as it is in your rule, ye
must drawe a lyne vnder the whole
summe , setting the diget ryght vnder
the same place , beneath the lyne , the
which is 8 and keepe the articles in
your minde , which is 2. Nowe to the
second place toward the left hand, say:
2 that I haue in my minde , and 2 is 4
and 2 maketh 6 and 3 is 9 and 5 is 14
and 6 is 20 and 9 is 29 nowe set the 9
vnder 2 and keepe 2 in minde, and adde
them to the first fygure of the thyrde
place which is 3. Nowe say, 2 and 3 is
5 and 4 is 9 and 9 is 18 and 4 is 22
and 5 is 27 and 8 is 35. Now set 5 vn-
der 3 and keepe three in minde. Now
to the iiij place towarde the left hande,
where 4 standeth, now 3 that you haue
in minde and 4 is 7 and 7 is 14 and 8
is 22 & 3 is 25 and 4 is 29 and 7 is 36
set 6 vnder 4 and keepe 3 and ad that 3
to the vndermost figure of the firt sum
that is 3 and say 3 and 3 is 6 and 6 12
and 7 is 19 and 2 is 21 and 3 is 24 and
6 is

6 is 30. All the figures of this place ad-
ded together as you see, maketh article
number 1 wherefore according to your
rule, set a cipher 0 under that place be-
neath the line, and the article which is
3 next to the same cipher, and all is fini-
shed. And all these summes thus collec-
ted together, maketh 3 0 6 5 9 8 0

An other example of Addition.

$$1\ 0\ 0\ 6\ 6\ 7\ 8\ 4\ 5$$
$$6\ 0\ 0\ 0\ 3\ 1\ 9\ 0\ 0$$
$$5\ 0\ 0\ 5\ 4\ 5\ 1\ 6$$
$$8\ 0\ 0\ 1\ 2\ 0\ 2$$
$$6\ 4\ 3\ 1$$
$$1\ 2\ 0\ 2\ 0\ 5\ 2\ 5\ 7\ 9$$

Begyn first as you did before, at the
first places adding them al together, be-
ginning at the nethermost, saying 1 & 2
is 3, and 1 is 4, and 5 is 9, this is the
whole summe of the figures standing
in the first place, the which is diget nū-
ber, and therfore according to the rule,
set it right under ỹ same place beneath
the lyne. Then proceede to the second
place, and begin at the nether end, say-
ing.

ing: 2 and 6 is 8, and 9 is 17, & 4 is 21,
this number is compost number, ther-
fore set the diget right vnder that place
beneath the line, which is 1, referuing
the article in your minde, and so to the
third place, saying: that I haue in my
minde and 4 is 5, and 2 is 7, and 1 is 8,
and 9 is 17, & 8 is 25, this number al-
so is compost, wherefore set the diget 5
vnder that third place, & reserue the ar-
ticle 2 in minde to the next place, then
to the next place saying: 2 that I haue
in minde & 6 is 8, and 1 is 9, & 5 is 14,
and 1 is 15, & 7 is 22, this is also com-
post, therfore set the diget 2 vnder that
iiii. place, and reserue the article 2 to the
next place. Then to the fift place saying
2 that I haue in minde and 4 is 6 and
3 is 9, and 6 is 15, this is also compost
number, set the diget 6 vnder the fift
place, and keepe the article in minde. To
the vi place saying 1 that I haue in
minde and 8 is 9 and 5 is 14 and 6
is 20, this is article nomber, therefore
according to the rule set cipher vnder
the place beneath the line, & keep the ar-
ticle in minde, and come to the vij place

.viii.   in

in ẏ which places because thou findeſt
nothing but ciphers, to the which thou
mightest adioine thy article reſerued,
the which was 2 therfore vnder ẏ ſame
vij place ſet that ſame reſerued 2 and
then come to the viij place, ẟ there fin-
deſt thou nothing but ciphers, wherfore
vnder the ſame place ſet beneath ẏ line
a cipher, accoꝛding to the rule. Then
come to the ix. place ẟ ſaẏ: 5 and 6 is 11
and 1 is 12, the which is compoſt num-
ber, therfore ſet the diget which is 2 vn-
der the lyne, and reſerue the article in
minde, which is 1, now becauſe there
is no mo places whereunto ye might
adde this reſerued article, therefore ac-
coꝛding to your rule ye ſhall ſet it down
next vnto the figure that ye dyd ſet vn-
der the lyne laſt, as in your example.
Theſe two examples were ſufficient
inough to the reaṣnes of Addition,
howbeit yet that it may be the plainer,
I will ſet downe an other example, as
this following.

1	4	6	9	9	0	0	0	¶ Adde the fyrſt
3	8	2	9	0	2	0	0	place together.
0	1	0	9	1	6	0	0	Firſt there ij fin-
		0	2	0	0	0	0	deſt nothing but ci-
5	5	1	0	0	8	0	0	phers, wherfore ſet

a cypher vnder the
line, and ſo likewiſe in the ſecond place.
In the third place thou findeſt 6 and 2,
which maketh 8, the which for becauſe
it is diget number, ſette it vnder that
place beneath the lyne.

In the iiii. place is 1 and 9 which ma-
keth 10, and becauſe that this is article
number, ſet a cipher vnder that place,
beneath the line, and reſerue the article
to the next place, ſaying, 1 that I haue
in my mind, & 2 is 3, and 9 is 12, and 9
is 21, and 9 is 30. This is alſo article
number, wherfore ſet a cypher vnder
that place beneath the line, and reſerue
the article 3 in minde to the next place.
Thē come to the vi place, ſaying, 3 that
I haue in my minde and 2, is 5, and 6
is 11 : this is compoſt number, there-
fore I ſet the diget which is 1, right vn-
der that place beneath the line, and re-
ſerue the article to the next place, ſay-
ing:

ing: 1 and 1 is 2, and 1 is 3, and 8, is a 11, and 4 is 15, this is also compost: therefore set the diget 5 vnder the lyne, and adde the article reserued, to the figure in the next place, saying: 1 and 3 is 4, and 1 is 5. This is nowe called diget number, therefore sette it vnder lyne, and then all is finished.

¶ Certaine examples to practise your selfe in, touching the exercise of Addition.

```
1 6 7 6 8 9 0 0        1 0 0 0 0 0
3 6 2 1 9 8 8 6     1 1 3 4 5 6 8
9 2 0 0 0 0 3 2     1 2 0 0 2 0 3 0
1 1 1 1 6 8 4 1       1 0 0 0 0 0 0
1 9 4 2 1 3 2 6       3 8 9 2 1 0 0 0
───────────────────────────────────
1 7 5 5 2 6 9 7 9     9 2 3 9 7 3 9 0

9 0 9 0 0 0 1 0 0 0     6 4 0 0 0 0
2 6 5 1 2 6 0 0 0 0     8 6 0 0 0 0
    2 5 4 3 2 0 7     9 9 8 0 0 0
2 1 6 5 4 0 0 0 0      7 8 0 0 0 0
      9 5 0 0 0        9 0 0 0 0
       1 0 0 0         0 0 0 3
───────────────────────────────────
1 1 7 8 9 5 2 0 0 7 2    3 9 6 8 0 0 9
```

3	0	0	0	2	6					3	0	1	0	0	2	6	8
2	0	5	8	1	4					1	0	6	1	0	9	8	6
9	0	1	0	0	0					1	0	0	0	9	3	9	
3	0	9	6	0	0					1	0	0	0	2	3	9	
	0	0	3	0	0					2	0	0	0	9	1	7	
3	0	1	6	4	4	7				8	0	6	4	0	4	9	

Of the proofe of Addition.

For the proofe of Addition, yée ſhall
make a croſſe, after the faſhion that fol-
loweth, and then yée ſhall come firſt to
the addible ſummes, and pluck out all
the nines that yée finde there, and the
reſt whatſoeuer it bée, that will not
make 9, ſette it at the vpper ſide of the
croſſe. Then come to the totall ſumne
vnder the line, and likewiſe deduct all
the nines that yée can finde there, and
that that remaineth, not able to make
9, ſette it at the vndermoſt part of the
croſſe, and if it be like the remanant of
the addible number, which ſtandeth in
the vpper part of the Croſſe, your work
is good, if not, it is vndoubtedly badde,
as by this example following, yée may
the better perceiue.

An example of the proofe.

A	2	5	0	0	6	7	
B	3	3	0	4	2	8	
C	5	8	1	0	9	8	

Now for to make the proofe of these
numbers, ye shall begin at the first fi-
gure that ye haue made, in saying: 8 &
0 is 8, and 2 is 10, take away 9, then
there resteth 1, then 1 & 7 is 8, and 4 is
12, take away 9 rest 3, then 3 & 6 is 9,
then to the two ciphers of nothing, that
nothing do signifie, then 3 and 5 is 8,
and 3 is 11, take away 9 rest 2, then
2 and 2 is 4, this 4 it behooueth you to
put at the nether end of the crosse. Then
come to the place of C vnder the line,
and say 8 (yee shall leaue the 9 and the
cipher 0 that is nothing worth) and do
ioyne 1 therto, and make it 9, and leaue
that, then 8 and 5 is 13, then take a-
way 9 rest 4, which 4 yee shall put at
the vpper end of the crosse, and then is
your proofe good, for both the ends bee
like as yee see in this figure following.

B 3   And

And at the two other
endes you shall put two
oo, which of themselues
signifie nothing, to cer-
tifie, that of them com-
meth nothing.
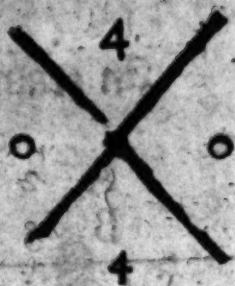
An other example.

A	7	8	9	1	6	4	3	2	6	li.
B	4	9	3	0	0	6	7	1	5	li.
C	2	9	9	9	3	4	7	8	4	li.
D	4	6	0	6	4	5	5	3	0	li.
E	9	3	6	4	5	8	7	7	8	li.
F	4	4	5	1	9	3	0	0	1	li.
G	3	3	3	4	3	9	1	3	4	li.

We shal say semblably 1 and 8 is 9, ε
alwaies leaue them, then o that dooth
nothing. then 4 & 5 been 9, than 6: then
we shall returne to the tenthes, ε shall
find o, that dooth nothing, then 7 that
maketh 9 rest 4, then 3 beene 7, then 8
been 9 rest 6 thē 1 is 7, and 2 is 9: then
come to the place of hundreds, then o
is nothing worth, then 7 and 5 is 9 rest
3, then

3, then 7 is 9 rest 1, then 7 is 8 and 3
is 9, rest 2: then come to the place of
thousands, and adioyne the 2 to the 3,
that is 5, then 8 is 9 rest 4, and so con-
sequently vnto the end.

And if peraduenture wee finde this
figure 9 because of the breckenesse, wee
shall leaue it, and shall find at the ende
9: therefore wee shall put at the end of
the crosse 0, in signifying that there is
nothing aboue 9. And so shall wee put
in the number of G, and we shall find
like 9: for the which
semblably, wee put 0.
And so is the Addi-
tion good and well
made, as may bee
seene by this profe.

As touching of Addition in broken
numbers, ye shall finde, that vnder the
title of Reduction heereafter.

The ende of Addition.

B 4

Of

Substraction is a manner of abating
or subducting a lesse summe out of a
greater, or like of like, shewing what
remaineth.

In Substraction are two numbers,
the first is the number abased, the se-
cond, the number abating.

Then when ye wil substract any one
number out of another: First ye shall
write the number to be abated, and vn-
der it directly figure vnder figure, and
place vnder place wryte the abatour, e
beneath these two summes drawe a
lyne, then begyn your Substraction at
the first places, and subdua the figure
standing in the first place of ye abatour,
to the first figure standing in the first
place of the number to bee abated, and
the rest that remaineth after the abate-
ment set it right vnder the same place
beneath the line, and so doo likewise in
the second, ye third, and all other places.
And whe ye haue all done, the number
that shall remaine vnder the lyne, shall
be that that remayneth after the sub-
duction of the abatour of the number
abated

abateb. As foz example,

Lent.	8	3	4	5	6	I lent a man 83456
Paid.	4	1	1	3	1	li, of the which bee
Rett.	4	2	3	2	5	hath paid me 41113

li. againe, now I de-
fire to knowe howe much remayneth.
Then accozding to the rule, fyzſt I ſet
the lent mony, & right vnder that I ſet
the repayd money figure vnder figure,
and place vnder place, as ye ſee by the
example. Vnder both theſe ſummes I
muſt dzaw a line, and begin to ſubtract
the vnder ſum out of the vpper, ſaying:
1 out of 6 remayneth 5, this 5 y̆ remay-
neth accozding to the rule ſet vnder the
ſame place beneath the line. then to the
ſecond place, pluck 3 out of 5 remaineth
2, ſet y̆ vnder the lyne: then to the third
place, pluck 1 out of 4 remayneth 3, ſet
that vnder the lyne: then to the fourth
place, take 1 out of 3 remaineth 2, ſet it
vnder the lyne: then the fift place, take 4
out of 8 remayneth 4, ſet that alſo vn-
der the line, and ſo thou haſt fyniſhed.
Then thou ſhalt vnderſtande that it
which is vnder the lyne is the remaind

of

of the money not yet payd

An other example.

87660   li.   Begyn at the fyrſt place
67560   li.   saying: 0 out of 0 remay‑
20100   li.   neth nothyng, ſet the fy‑
              gure of nothing vnder ÿ
lyne : then to the ſecond place 6 out of 6
remayneth nothing, ſet the cipher vn‑
der the lyne : Then to the third place 5
out of 6 remayneth 1, ſet 1 vnder ÿ line:
Then to the fourth place 7 out of 7 re‑
mayneth nothing, ſet the figure of no‑
thing vnder the lyne. Then to the fyſt
place, take 6 out of 8 remayneth 2, ſet 2
vnder the line, and thus thou haſt done.
Then 20100 remaineth yet to be paid.

Now thou ſhall note that ſometime
it chaunceth that the fygure ſtandyng
beneath is greater then the figure ſtan‑
ding aboue him, in the ſumme from
whom ſubduction is made. In this caſe
thou ſhalt in thy minde put ten ? to the
fygure in the vpper ſumme , and then
ſubtract the neather fygure out of the
ſame, ſet the remanant vnder the lyne,
10   and

and foz the ſame ten the which thou did-
deſt put to ẏ vppermoſt figure to make
him greater, thou ſhalt adde one to the
next fygure ſtandyng in the neather
ſumme, and then ſubſtract that lyke-
wyſe out of the fygure aboue hym (if
the fygure aboue be bygger, then the fi-
gure beneath with his addition, either
els equall) and that remaineth, ſet it vn-
der the lyne, as ye did in the other er-
ample. If the figure aboue be leſſe then
the figure beneath, then do to him as ye
did to the other befoze, that is to ſaye:
adde ten to him, and ſo foзth in al other
places. Where the neather figure of the
abatour is greater then the vpper fy-
gure from whence it ſhould be abated,
as by this erample ye ſhall moзe clear-
ly perceiue.

<div align="center">

An erample.

</div>

57295420 Begyn yovr ſubſtraction
48765297 ſaying: 7 out of o that
————————
08530193 cannot be, therefoзe foз-
becauſe that 7 ſtanding
in the neather ſumme is moзe then the
fygure ſtanding in the fyзſt place of the
<div align="right">vpper</div>

b

vpper summe : ye must adde a tenne,
then deduct your 7 out of 10, and there
remayneth 3 , then come to the second
place , and for the ten that ye borowed
in your minde , & added it to that figure
in the first place to make it byg inough
for the fygure vnder it to be subducted
out of it : for the same ten (I say) ye shall
put to the next fygure in the neather
place of ẏ neather sum 1, then say 9 and
1 is 10 , then subduct this 10 out of the
figure of 9 standing aboue it in the vp-
per summe, and that ye cannot, therfore
doo as you did before in the fyrst place,
put 10 to the 9 in your mynde , saying :
10 and 9 is 19 , then deducte the 10 be-
neath out of ẏ 19 aboue, & there remai-
neth 9 to be set vnder the lyne . Then
to the figure standing in the third place
in the neather summe, put 1 for the ten
that you borowed in your minde , the
which ye added to 9 in the second place
of the vpper sum to make it greater, sai-
ing : 1 and 2 is 3 , substract that 3 out
of 4 aboue it , remaineth 1 to be set vn-
der the lyne . Then to the fourth place,
take 5 out of 5 remayneth nothing , set

a figure of nothing vnder the lyne : and
come to the v place take 9 out of 9, re-
maineth 3 to be set vnder the lyne, so
to the vi place, take 7 out of 2 that can-
not be, therfore put to the same 2, accor-
ding to thy rule 10 ę then it is 12, then
subduct 7 out of 12 remayneth 5 to be
set vnder the lyne, ę for the same 10 that
thou borrowedst in thy minde to put
to thy fygure of 2 in the vpper summe,
thou shalt adde 1 to the figure standing
in the next farther place, in the neather
sum, comming to the same place which
is the seuenth place, saying 8 and 1 the
which I haue to set to him is 9, then 9
out of 7 that I cannot, wherefore like-
wyse agayne I must helpe the same 7
with a ten, and then it is 17 out of that,
now subtract your 9 and remayneth 8
to be set vnder the lyne : nowe as you
haue done before in all other places for
the 10 here borowed and adioyned, then
adde 1 the next figure standing in the
seauenth place of the neather number,
saying : 4 and 1 is 5 then subduct thys 5
out of the 5 aboue, and remayneth no-
thing, wherfore set a fygure of nothing

beneath

beneath the lyne, andso ye haue done.

How be it ye shall note that when ye haue a cipher to be wrytten in the last place of any summe, ye shall not write it, fo2 in the last place it sinifyeth nothing of it selfe, neither doth it augment the signification of any of the other.

Yet one other example wil we set, and then make an end of Substraction.

$$\begin{array}{r} 1066081007100 \\ 484057486087 \\ \hline 519023527013 \end{array}$$

Yee shall begynne saying : 7 out of that cannot bee, fo2 yee cannot take 7 out of nothing ; wherefo2e as yee haue doone alwaies in the example afo2e, put ten to that cipher, and that maketh 10,then deduct your 7 out of it now, and there remayneth 3 to be set under the lyne. When fo2 this ten that ye adde to the figure in y first place of your upper number,set 1 to the figure standing in the second & next place of the neather number saying : 8 and 1 is 9, then 9 out of the cipher aboue, that cannot be, therefo2e as ye did befo2e make that 0 10, & then subduct your 9 out of this added 10, remaineth

maineth 1 to be set beneath the line, thē
for this 10 lykewise that you borrowed
in the second place of your vpper num-
ber, ye shal set one to ye next figure stan-
dyng in the third and next place of the
neather summe, saying: 1 and the o is
one, then take that 1 out of 1 aboue him
remayneth nothing; set a figure of no-
thing beneath the lyne; then to the iiij
place take the o out of 7 aboue remay-
neth 7 still to be set vnder the lyne. So
to ye v place, take 8 out of o that ye can-
not, therfore put 10 to the cipher & then
subduck it, and remaineth 2, set that vn-
der the lyne: for this ten adde 1 to the
next fygure in the vj place, which is 4
then 4 and 1 is 5, and 5 out of o that ye
cannot, then make o 10 & take the 5 out
of it remaineth 5 to be set vnder them,
for the borowed ten, likewyse set to the
next fygure in the vij place of the nea-
ther number 1 saying: 1 & 7 make 8 and
2 out of 1 that cannot be, therefore put
ten to that 1, & then 10 and 1 is 11, out
of this 11 deduct your 8, remaineth 3 to
be set vnder the line: then for this 10 to
the next fygure in the viij place of the

<div align="right">neather</div>

neather summe, set 1 saying: 5 & 1 is 6,
then 6 out of 8 remaineth 2, then to the
ir place, take 0 out of 0 remaineth also
0, set that vnder the lyne in the r place
take 4 out of 0 that cannot be : therfore
put 10 to that 0 and subduck your 4, re-
maineth 6, then to the figure in the next
place which is the r place, put 1 saying
8 & 1 is 9, then 6 out of 0 that cannot be
therfore put ten to it, and then subtract
your 9 out of 10 remayneth 1, set it vn-
der the lyne : for his borowed ten put 1
agayne to the next fygure which is 4,
saying: 4 & 1 is 5, 5 out of 0 that cannot
be, therfore likewise againe make it 10
and then take 5 out of it, remayneth 5,
thē again for your borowed 10 put 1 to
the next place. But because there be no
mo places, therefore subtract it alone
out of the figure aboue, saying: out of
1 remayneth nothing, therfore nothing
is to be set vnder the lyne, not so much
as a cipher, for because that it is in the
last place, So then the summe vnder
the line is the remaine that remaineth,
after the substraction of the lower sum,
out of the vpper summe.

The

The proofe of Substraction.

The proofe whether you haue subtrac-
ted well or no, ye must adde the remain
to the number payd, and if they twaine
added together doo make the first sum
lent completly, then is it well substrac-
ted: if not, it is not well substracted, as
by the last example yee maye well per-
ceyue. For by the rule of Addition adde
3 to 7, and thereof commeth 10, set the
cypher vnder the line, and reserue the
article to the next place foorth, accor-
ding to the rule of addition, and thou
shalt see these two summes added toge-
ther, to come to the first lent summe.
And this of Substraction, shall be suf-
ficient.

The fourth part, called
Multiplication.

Multiplication is a manner of en-
creasing or augmenting one sum
by another. In this feate of multiplica-
tion are three nombers to be noted, the
multiplied number, the multiplier, and
the number that redoundeth of the mul-

C   tipli-

tiplication of multiplied number by the
multiplier, as in example. Multiply
this number 4 by 3, and thereof com-
meth 12, 4 is the number multiplied, 3
is the number multiplier, and 12, the
third number that redounded of the
multiplication of one of the numbers
by the other.

Then for more experience and ready
working in this kinde of operation, ye
shall perfectly know by memory ꝑ mul-
tiplication of one diget by another, the
which ye shal haue in the table next fol-
lowing.

Of the which, one diget yee shall
loke for in the head of the Table, and
the other on the left side of the Table.

The Table.

1	2	3	4	5	6	7	8	9	10
2	4	6	8	10	12	14	16	18	20
3	6	9	12	15	18	21	24	27	30
4	8	12	16	20	24	28	32	36	40
5	10	15	20	25	30	35	40	45	50
6	12	18	24	30	36	42	48	54	60
7	14	21	28	35	42	49	56	63	70
8	16	24	32	40	48	56	64	72	80
9	18	27	36	45	54	63	72	81	90
10	20	30	40	50	60	70	80	90	100

By this table ye shal sufficiently learne
to multiply one diget by another, as for
example. If ye wil multiply 9 by 5, look
for the 9 at the head of the table, & for 5
the multiplier at the left side of the ta-
ble, then with thy finger descend down
fró the place where 9 standeth, till thou
come before the place where the 5 stan-
deth, and there in the same angle thou
shalt finde 45, & that commeth of 5 times
9, and thus by all other. There is also
a proper rule for the multiplication of

one

one diget by another, & it is this : when
thou wilt multiply one diget by ano-
ther, note the distance of the greater di-
get frō 10, & by the same distance mul-
tiply the lesse diget or equal, & that that
proceedeth of it, deduct out of the article
whom the lesse number doth denomi-
nat, and the rest is it that ye seeke for,
as for example : if ye wil multiply 7 by
5, first see the distance between 7 which
is the greater number and 5, and that
is by this 3 multiply 5, and that is 15,
thē deduct this 15 out of the article that
5 that lesse number dooth denominate,
which is 50. then remaineth 35, that is
5 times 7 : so likewise shall ye do if the
multiplier and the multiplied be a like.
Howbeit, most ready it is to knowe
without booke very perfectly, the mul-
tiplication of euery Diget one in ano-
ther. Now when ye wil multiply anie
one number the one by the other, first
write faire your number to bee multi-
plyed, and vnder it the multiplicatour,
beneath both these sums ye shall draw
a line, then shall yee consider whether
your multiplier be a diget or article, or

els

els compost number. If it be diget num=
ber, ye shal begin to multiply by the di=
get, the figure or diget standing in the
first place of the number to be multiply=
ed, and that that commeth of it, if it bee
but a diget, set it vnder the line, right
vnder the same place, and then proceed
further to the next place, and multiplie
the figure standing in that place by the
same multiplier, & that that redoundeth
of it, if it be a diget, set it likewise vnder
the line, right vnder the same place, and
so do likewise euery place folowing, vn=
til such time as all the figures standing
in euery place be multiplied. Then that
which shall be founde vnder the line, is
the summe comming of the multiplication
of these two numbers, the one by the
other. As by example yee shall the bet=
ter perceiue. If yee will multiply this
summe 3140 by this 2, yee
shall sette your figures after
this sort, as ye see here.

Begin your multiplication, saying 2
times 4 is 8, set that 8 vnder the lyne,
then come to the next place, and say : 2

times 1 is 2, set it vnder the line, then
to the third place, 2 times 3 is 6, set that
vnder the line, so to the fourth place, 2
times 2 is 4, set that vnder the line al
so, and then thou hast done, so that this
number 4628 vnder the line, is it that
commeth of the multiplication of this
sum 2314 by this number 2. But if it
be so that in the multiplication of anie
figure in the number multiplicable, by
the multiplier, that it which redoun-
deth of it bee article number: then yee
shall set a cipher beneath the line, right
vnder the same place where the multi-
plication is, and reserue the article to be
added to the number that proceedeth of
the multiplication of the figure in the
next place by the aforesaid multiplyer,
the which likewise if it amount to an
article, do likewise as I bad you to do
in the first place: but if it bee compost
number, then shall yee set the _Dyget_
vnder the same place beneath the line,
and reserue the article to be added like-
wise, as is before saide of article num-
ber, as in this example.

8 1 4 1 6 4 2   If yee will multi

¶ply thys number

4 0 7 0 8 2 1 0   8141642 by thys

figure 5, begin at

the first place, saying: 5 times 2 is 10,
now because that this number is arti-
cle, ye shal according to the rule before,
set the 0 vnder the line, and reserue the
article 1 to be added to the number that
proceedeth of the multiplication of the
next figure, standing in the next place
of the sum multiplicable, by the multi-
plier: so then come to the next place,
saying: 5 times 4 is 20, to this 20 ad
1 for the article that ye reserued, & that
maketh 21, therfore because that this
is a compost number, therefore set the
diget vnder the line, beneath the same
place, and reserue the article to the next
place. Then come to the next place, say-
ing: 5 times 6 is 30, to this ad the ar-
ticle 2, which yee reserued in the place
next before, and then it is 32, set the di-
get vnder the line as ye did before, re-
seruing the article to the next place, the
come to the fourth place, saying 5 times
1 is 5, to this adde the article reserued or

                        which

which is 3, and that maketh 8, set thys
diget number vnder the line, and then
come to the v. place, saying 5 times 4
is 20: now because this number is ar-
ticle, set a o vnder the place beneath,
the line, reseruing the article 2 to be ad-
ded vnto the next places. Then come
to the vi. place, saying 5 times 1 is 5, to
this adde the article 2 reserued, & then
it is 7, set it vnder the line, then to the
seauenth place, saying 5 times 8 is 40
now because it is an article number,
ye shal set a cipher vnder the line, and
reserue the article 4 to the next place, &
for as much as there is no moe places,
ye shall set this 4 vnder the line next
vnto the o that yee set downe last, and
then you haue done.

When that your multiplier is com-
post or article number, then shal ye take
the first figure of your multiplier, & by
him shall yee multiply all the figures of
the multiplicable numbers, setting al-
way that that amounteth of it beneath
the line as ye did before. And when yee
haue multiplied the number multipli-
cable by the first figure of y multiplier:

then multiplie it agayne by the second
figure of the multiplyer, setting, euer
more the first figure of the number mul-
tiplicate directly vnder the fygure mul-
tiplicator, in what place so euer it stand:
and the number multiplicable is multi-
plied by all the figures of the multipli-
catour, then make a stryke vnder them
all, adding all the numbers multipli-
cate together as they stande, and that
which proceedeth of that addition, is the
number multiplicable, now multiplied
by the whole number multiplicatour,
as by thys example yee shall plainlie
perceiue.

If yee will multiplie this
number 2345
by this num-
ber 9384, set
them first (as
ye see heere)
vnder the draw
a lyne, then begyn with the fyrst figure
of the multiplicatoun, which is 4, and
by him first accoading to the rule mul-
tiplie all the multiplycable number
through,

throughout saying : 4 times 5 is 2 0, set
the cipher under the lyne, reseruing the
article 2 to the next place . Then to the
seconde place 4 times 4 is 16 , to that
put your reserued article 2, that is 18,
set the diget 8 under the line , reseruing
the article 1 . Then to the thyrd place 4
times 3 is 12 , and 1 reserued from the
place before that is 13 , set ÿ diget 3 un-
der lyne , reseruing the article 1 , then
to the fourth place 4 tymes 2 is 8 , and
1 reserued is 9 , set that diget 9 under
the lyne , and so haste thou multiplied
this number multiplicable by the second
figure of multiplicatour. Now then ac-
cording to the rule afore , multiplie the
multiplicable number by the second fi-
gure of the multiplicatour , saying : 3
times 6 is 15 , set the diget 5 under the
lyne, according to the rule, whith byd-
deth to set euermore the fyrst figure of
the number multiplicate under ÿ place
where the figure multiplicatour dooth
stande : as heere nowe thou multiply-
est the multiplicable by the seconde
fygure of the multiplicatour , whith is
3, then say : 3 times 5 is 15, set this di-

get

get 5 vnder the lyne, and beneath the fyrst number multiplicate, right vnder the figure multiplicatour, as thou seest in the example, and reserue the article 1 then to the second place of the multiplicable, 3 times 4 is 12, & 1 that is reserued is 13, set the oyget 3 vnder the line, as ye see in the example, and reserue the article 1, and so to the thyrd place, 3 times 3 is 9, and 1 reserued is 10, set a 0 vnder the line, and reserue the article 1, so to the iiij place saying: 2 tymes 3 is 6, and 1 reserued is 7, set it vnder the line, thus haue ye done your multiplication by the second figure of the multiplicatour 3. Then take the thyrd figure of multiplicatour, which is 2, and multiply also all the numbers multiplicable by him saying: 2 times 5 is 10, set the 0 beneath the lyne, right vnder the place, where this figure 2 the multiplicatour standeth, as ye se in the example and reserue ÿ article 1, thē to the second place 2 times 4 is 8, and 1 reserued is 9 set ÿ 9 vnder the line: then to ÿ iij place, 2 times 3 is 6, set that vnder the lyne. So to the fourth place saying: 2 times

2 is

2 is 4, set that 4 vnder the lyne. Now
begin to multiply with the fourth and
last figure of the multiplicatour, saying:
1 times 5 is 5, set the 5 vnder the lyne,
as I sayd before, and as ye see in there
ample, then to the second place, 1 times
4 is 4, set that 4 vnder the lyne, then 1
times 3 is 3, set that 3 vnder the lyne,
then 1 times 2 is 2, set that 2 vnder the
lyne, and ye haue done your multiplica-
tion. Then must ye adde according to
your rule afore all this single multipli-
ed number together, & that which com-
meth of the addition, is the number that
commeth of the multiplication of thys
number 2345, multiplicable by the
number 1254, multiplicatour. When
come to the first place, and see what is
there, and there ye shall fynde a 0, set
it vnder the lyne, and so to the seconde
place, there ye shall fynde 5 and 8 which
is 13, set the 3 vnder the lyne, re-
seruing the article 1 to be added to the
next place, then come to the iij place,
there is 0, 8 and 3 which is 6, to that ad
the reserued 1, and that is 7, set that 7
vnder the line, now to the fourth place

5 9 0,

5.9.d. and 9, maketh 23 set the 3 vnder
the lyne, reserue the article 2. So to the
v place, 4, 6 and 7 is 17, to that adde
the reserued 2 which maketh 19, set the
9 vnder the lyne, and keepe the article
1 in mynde. Then to the vi place, 3 and
4 is 7, and 1 reserued is 8, set it vnder
the lyne. Then to the seauenth place
there fynde ye but 4, wherefore sette it
vnder the lyne and then haue ye doone.
So that thys summe vnder the lyne
2 8 9 3 7 3 0 is the whole nomber mul-
tiplicate.

Heere followeth an other example of
Multiplication.

A

B

G   3 2 2 5 8 5 3 5 0 6 0 0 0

Your figures set after this sort, A,
is the multiplycable number, B. is the
number multiplicatour, C. is the num
ber multiplicate, which commeth of the
addition of all the seuerall numbers to
gether standing betwene the lines. We
gyn then your woorke, taking the first
figure of B the multiplicatour, which is
0, and by him multiply all the figures of
A the multiplicable, ⁊ that that procee
deth of it, set vnder the line as ye see, and
so to the second figure of the multiply
catour, which is also 0, multiplie all the
figures of A by it likewise, and set that
which commeth of it, vnder ẏ line, right
vnder the second place where the mul
tiplicant figure standeth. Then to the
third figure, which is also 0, multiplie
all the multiplicable number A and set
that which commeth of it right vnder
the third place beneath the line, as ye see
plaine in your example. For of the mul
tiplication euermore by ciphers commeth
nothing but ciphers. Nowe to the iiij
place of B the multiplicatour, there shal
ye finde the figure 2, multiply then al A
the multiplicable number by this figure
2 saying:

2 saying: 2 times 3 is 6, set that 6 vnder the line, right vnder the place where the multiplicatour 2 standeth, as it appeareth in your example. Then to the ij place, 2 times 0 is nothing, sette that 0 vnder the lyne, next the vfore sayde 6, and so to the thyrd place, 2 tymes 0 is nothing, sette the figure of nothyng downe vnder the lyne, and so to the fourth place, 2 tymes 6, is 12, sette the dyget 2 vnder the lyne, and referue the article 1 to the next place. Then come to the fyfte place, 2 tymes 2 is 4, and 1 that I referued is 5, set that 5 vnder the lyne. Nowe come to the fyxt place saying: 2 times 4 is 8, set that 8 vnder the lyne. So to the vij place, 2 tymes 6 is 12, set the dyget 2 beneath the line, and referue the article 1 to be set in the next and laft place, as ye fee in the example. Thus haue yee multiplyed A the multiplicable by iiij fygures of B the multiplicatour, therefore now take 0 the v figure of the multiplicatour, & by it also multiply all the figures of A the multiplicable, & thereof shall come all ciphers to be set vnder the line, as ye fee here in

the

the copy. Then to the vi fygure of B the
multiplicatour, which is 5, by this 5
also multiplie all the fygures of A the
multiplicable, saying: 5 tymes 3 is 15,
sette that 5 beneath the lyne, right vn-
der the fyrt place, where 5 the multi-
plicatour standeth, as is to see in the
copy, and referue the article to the next
place. Then come to y second place and
say: 5 times 0 is nothing, set the 1 which
yee referued in your mynde vnder the
line, and so to the thyrd place, saying: 5
times 0 is nothing, set the 0 vnder the
line. Then to the fourth place saying: 5
times 6 is 30, set the cypher vnder the
lyne, referuing the article 3 vnto the
next place. Then come to the v place
saying: 5 times 2 is 10, and 3 that I re-
serued is 13, set y diget 3 vnder the line,
and referue the article 1 to be added to
the next place. So to the vi place, say-
ing: 5 times 4 is 20, and 1 referued is
21, set y diget 1 vnder the line, referuing
2 the article to the next place. Then to
the vij and last place, saying, 5 times 6
is 30, and 2 that was referued is 32, set
the dyget vnder the lyne, and referue

ʒ the article to be set in next ẏ laſt place
beneath the lyne, as yee may ſee in the
example, and ſo is all finiſhed. Then vn-
der all theſe particular ſummes drawe
a line, and adde all them together, ſet-
tyng euer that which commeth of the
addition vnder the lyne, as is in the ex-
ample, the which ſhall amounte vnto
this ſumme 3225853506000011 and thys
is it that commeth of the multiplication
of the ſumme A by the ſumme B.

¶ Certayne examples of multiplicati-
on, in the which ye may exerciſe
your ſelfe, to be the more
practiſed in it.

$$A\ 3\ 4\ 5\ 2\ 3\ 6\ 7$$

To multiply by $B\ 8\ 8\ 9\ 2\ 5\ 2\ 9$

$$
\begin{array}{r}
3\ 1\ 0\ 8\ 1\ 3\ 0\ 3 \\
6\ 9\ 0\ 4\ 7\ 3\ 4 \\
1\ 7\ 2\ 6\ 1\ 8\ 3\ 5 \\
6\ 9\ 0\ 4\ 7\ 3\ 4 \\
1\ 0\ 7\ 1\ 3\ 0\ 3 \\
2\ 7\ 6\ 1\ 8\ 9\ 3\ 6 \\
2\ 7\ 6\ 1\ 8\ 9\ 2\ 9 \\
\end{array}
$$

Sum.   3 0 7 0 0 3 0 8 1 8 9 8 1 9

D   Two

Two other examples.

```
  64970              7432
To mul.  13       To mul.  324
─────────         ─────────
 194910             29728
  64670             14864
─────────          22296
Sum. 844610       ─────────
                  Sum. 2407968.
```

As for the multiplication by squares is neither woorth the writing, nor the reading. And whereas in other copies is set duplation, triplation, and quadruplation, all that is superfluous, for so much as it is contained vnder the kinde of multiplication, and they that are expert in this feate, may right wel perceiue it.

¶ The proofe of Multiplication.

The proofe of multiplication may be by 2 meanes, by the subducting out of all the 9, and the second way is by particion. As concerning the first way, ye shall first make a crosse, then beholde the multiplicable number, and subduct out of the same all the nines, and that that remaineth not able to make nine, set

sette it at the ende of the crosse. Then
come to the Multiplicatour, and doe
likewise in him, and that which remai-
neth (all the nine subducted) sette it at
the vnder part of the crosse.

Then multiply the figure standing
in the vpper part of the crosse, by the
figure standing in the nether parte of
the crosse, and out of the same that cō-
meth of it, take 9 as oft as ye can, and
that which remaineth not able to make
9, sette at the right side of the crosse.
Then come to the totall summe multi-
plicate, and subduct all the nine out of
him likewise, and that which remay-
neth, not able to make nine, sette it at
the left side of the Crosse, and if it be
like the figure standing at the right side
of the crosse, then it is well, otherwise
it is not. As by this example next fol-
lowing, yee shall perceiue the same
more plainly.

An example of the proofe.

```
A        7963              7
B        1852
       ────────
       15926
       39815                4        4
       63704
        7063                7
       ────────
C    14747476
```

To knowe whether the summe C, bee the very summe which commeth of the multiplication of A. by B. then first subduct all the nines that yée find in the multiplicable A. and the rest sette it at the vpper ende of the crosse, which yée shall finde to be 7. Then to the multiplicatour B doe likewise, and see what remaineth, and there remaineth also 7, sette that also on the neather ende of the crosse: then multiply this 7 standing in the vpper end, by 7 standing in the neather end, and thereof commeth 49. When thou hast taken al the nines out of this 49, then there will remaine 4, the which thou shalt see at the right side of the Crosse.

Then

Then come to C. ye totall summe of the
multiplication, and there likewyse take
out all the 9 that yee finde there, and
the rest not sufficient to make 9, set it at
the least syde of the Crosse, the which
thou shalt finde to be 4 : and for because
that this 4 to be sette at the left side, is
lyke the figure standing in the ryghte
side (for that is 4 also) therefore thys
multiplication is good and well made:
and so shall ye finde it likewyse in all o-
ther examples.

¶ The proofe by Particion is to de-
uide the totall summe C. by the multi-
plicatour B. and if the quotient be iuste
A. then is it well multiplied, otherwise
it is not. But this way can ye not
practise, vntil such time as ye
haue learned the feate of
Particion.

¶ The ende of Multiplication.

¶ The fyst part called
Particion.

Particion is a part of Algozysme by
the which yee may easelie deuide a-
ny greater somme by a lesse oz equall;
shewing how often times the denisoz is
contained in the number diuisible.

In this seate of Particion be soure
numbers to be noted, the number diui-
sible, the number denisoz, the quotient,
and the remaine, if there be any.

Besoze you come to Particion it shall
be very needefull and necessary soz you
right persectly to know the table of mul-
tiplication of digets, which is set in the
chapter of multiplication. Foz vnlesse
that ye know that persectly, ye shal stick
greatlie, not onely in Multiplycation,
but alse in this seate of Particion, and
that exactlie had in memozie, the reste
shall be farre easier, as foz example. If
ye will knowe howe often tymes 7 is
contained in 60, imagin by and by that
this 7 shoulde be contayned 8 tymes,
then if ye know without the booke per-
sectly the sozesaid table, ye shall see that
8 times

8 times 7 is but 56. ergo 7 is contained
more then 8 times in 98. Imagin then
and suppose it to be 9 times in 68, then
by the table see what 9 times 7 is, and
you shall see that it is 94, wherefore
thou maiest conclude, that in 98, 7 is
contained 9 times, and 4 ouer.

Quotient.

Num. 45721 05977.

33333 3 Deuisor.

The 2 2 proofe.

6

To deuide this number 45731 by 3.
the 3 is deuisor. First ye shall set downe
your numbers to be deuided, and at the
end of that number on the right hand,
ye shall make a strike, wherin yee shall
set your quotient, and then sette downe
your diuisor, which is 3, vnder the figure
that standeth at the vttermost ende at
that   the

the left hand that is vnder 4, and then
say, howe many times 3 may I haue in
4, once 3 and 1 remaineth ouer, sette 1
within the strike, and that 1 that rema-
neth set ouer 4, then strike the deuisor
3 with a dashe of your pen, and sette the
diuisor 3 vnder the fygure 5, then ioyne
the article 1 to the dyget 5, and it is 15.
then saye howe many tymes 3 may I
haue in 15, 5 times 3, sette that 5 in the
strike next to the fygure 1 and close vp
the article 1 and the dyget 5 with a cy-
pher ouer either of them, and then strike
the diuisor 3 with a dash of your pen,
and set ꝑ diuisor 3 vnder the third figure
1, and see howe many times 3 yee may
haue out of 2, none, therfore set down a
cipher 0 within the strike next to the fi-
gure 5, & strike out your diuisor with a
dash of your pen & set the diuisor 3 vnder
the lig figure 5, then ioyne the article
2 to the diget 5, and that maketh 25, the
see how many times 3 you may haue in
25, 7 times 3 and 2 remayneth, set that
7 within the strike, next to the cipher,
and the 2 that remayneth set ouer the
fourth figure 5 and close vp the article 2

with

with a cypher, then strike out the De-
uisor, and set it vnder the first figure 1
at the right hande, then ioyne the arti-
cle 2 to the diget 1, and it maketh 21,
then see howe many tymes 3 yee may
haue in 21, 7 times and nothing re-
maineth, then set the 7 within ẏ strike,
and close the article 2 with a cypher o
ouer each of them, and strike out the di-
uisor with a dash of your pen, and so the
third part of 4523 1, is 1 5 077.

The second example.

		6 Diuisor
	0 5 0	
Num.	2 3 4 5	Quotient.
	6 6 6	39 0 5.part,

The   6 ————————— 3   proofs.

To deuide this number 2 3 4 5 by 6,
the 6 is the diuisor, begin your diuision
at the least hand, as is sayd in the first
example, and set your diuisor vnder the
o T   third

thyrd figure 3 , for yee may not haue 6
out of 3 therfore say how many times
6 may ye haue in 23 ,3 .and 5 remaineth,
set the 3 within the strike, and the diget
5 that remaineth set it ouer the seconde
figure, and close the article 2 with a cy-
pher o ouer it, and then strik out the di-
uisor with a dashe of your pen, and sette
your diuisor agayne vnder the thyrde
figure 4 , and then ioyne the article 5 to
the diget 4 and it is 54 , then see howe
many times 6 ye may haue in 54 ,9 and
nothing remayneth , sette the 9 with-
in the strike, and close vppe the article 5
and the dyget 4 with a cypher o ouer
either of them , and strike out the diui-
sor with a dashe of your pen, and set the
diuisor vnder the figure 5 and say : how
many times 6 may ye haue out of 5 , no
times, therefore sette downe a cipher o
with the stryke, and let the 5 stand, and
stryke out the diuisor with a dashe of
your pen, and so the 6 part of 2 3 4 5 , is
3 9 0, and the 5 that remaineth sette at
the ende of the quocient in this manner:

6 and so the quocient is 3 9 0

To

¶ To deuide 2 or 3 figures, or by as
many as pleaseth you.

Fyrste set downe your number to be
deuided, and your diuisor vnder it, be-
ginning at the leaft side, at such a place
as ye may take the leaft figure of your
deuisor in the laft ende, and then see how
oft yee may haue that figure in ye figure
aboue it, and that sette a part for your
quocient, with the which quocient yee
shall multiplie euery figure by it selfe of
your diuisor and that ye commeth of the
multiplicatio, ye shal abate of the figure
right ouer it, putting out that other fy-
gure, and sette the reft aboue it, and so
woorke in euery fygure by it selfe
throughout the deuisor. Then renewe
your diuisor figure forwarde, toward
your right hand (as before is rehearsed
and so cõtinue your woorke folowing to
the firft figure of your number to be de-
uided. Then it is to be noted, that if it
hap that your multiplied nũber that ye
should abate, be more then the number
ouer it, thẽ for a general rule ye shal not
take your diuisor out of the figure aboue
it, except that it may sufficiently yeld e-
nough

nough to all the abatements of the resi=
due , as more plainely ſhall appeare in
the example folowing.

Nu.   3 4 3 7

The   3   1   **proo fe.**

Firſt ſet downe this number 4123,
and deuide it by your double line, begin
your worke at your leaſt hand, ſetting
the article 1 of your diuiſor vnder 4 and
the diget 2 vnder the third figure 1, and
then ſee how many times y article 1 of
your diuiſor ye may haue in the 4 ouer
it, ye would ſay 4 times 1, but that can=
not bee, becauſe there ye may not haue
the quotient 4 multiplied with the diget
2 of your diuiſor, for therof commeth 8,
and the that 8 ye may not take out of 1:
duno   ouer

ouer the diget 2. Therfore say againe:
how many times 2 may ye haue in 4, 3
times and 1 remaineth, set tho 3 within
the strike of the quotient, and the 1 that
remaineth set ouer 4. and strike out the
article 2 of your diuisor with your pen.
Then multiply the quotient 3 with the
diget 2 of your diuisor, and therof com-
meth 6. Then ioyne the article 1 that
remaineth, and the diget 1 and it is 11,
thereout take 6, and there remaineth 5,
set the 5 ouer the thyrde figure 1, & close
by the article 1 ouer 4 with a figure, or
ner it, and strike out the diget 2 of your
deuisor againe but one figure forward
as thus: set the article 1 vnder the third
figure 1 in the No. and the diget 2 vn-
der the second figure, & 2 there see howe
many times 2 yee may haue in 5, that
remaineth, 4 times & yet there remay-
neth 1 which must be set ouer 5, & strike
out the article 1 with your pen. Then
multiplye the diget 2 of your deuisor
with the quocient 4, and it is 8, then
ioyne the article 1 that remayneth, and
the diget 2 in No together, and it is 12,
then take 8 out of 12 and there remay-

neth

neth 4, set that 4 ouer the seconde fy-
gure 2 in the No. and close vp ꝑ article
1 with a cipher o ouer it. & strike out ꝑ
vyget 2 of your diuisor with your pen.
Then renewe your diuisor againe, as
before is sayde, and set the article 1 vn-
der the seconde figure No. and then see
how many times 1 ye haue in 4, that
remayneth 3 times and 1 remayneth,
set that 3 within the stryke for the quo-
tient, and the one that remayneth setle
ouer the 4, and strike out the article 1
of your diuisor with your penne. Then
multiply the quotient 3 with the diget
2 of your vpnysor, and then it is 6, then
ioyne the article 1 that remayneth, and
the vygette 5 in No. and it is 3 1. Then
take 6 out of 13 and there remaineth 7,
set that 7 ouer the vyget 3 in No. and
close vp the article 1 with a cipher o o-
uer it, and strike out the diget 2 of your
vyuisor, and then the 12 part of 14 23 is
for the quotient 3 4 3, and the 7 that re-
mayneth shall be set at the ende of your
quotient as thus 7

¶ An example.

Re.

Di. 6 $\frac{2}{3}$ $\frac{7}{8}$ $\frac{1}{2}$

$\frac{3}{8}$ $\frac{4}{6}$

¶ An other example.

R. 121

D. 200   A $\frac{5}{1}$

$\frac{2}{2}$ $\frac{1}{1}$

We shall note that in these two examples the quotient standeth in the myddest betwixt the two lynes, and the numbes to be divided standeth next above the uppermost lyne, and the divisor standeth nexte under that neather line. But then ye must marke that there be two divisors, one is called the divisor currant, because it is alwayes removeable toward the right hand in the operation and also it is strickenout, but this divisor standeth alway under the neather lyne of the quotient. The other divisor is called the divisor permanent, for he is not removed nor blotted as the other is, but standeth alwaye perma-

nent

nent on the leaſt hand, directly agaynſt
the number that is to be deuided. And
iuſt ouer him ther ſtandeth the remaine
of the whole number, which remayne
cannot be deuided by the deuiſoꝛ, and
therefoꝛe it is ſet ouer the deuiſoꝛ per=
manét with a ſtrike betwixt, as ye may
ſee in the firſt enſample, where ⅼ is re=
mayning, and 6 is deuiſoꝛ.

A	8	3	0	8	0	9	3
C	8	7	7	0	2	3 0	4
B	4	4	4	4	4	4 4	

Foꝛ as much as in this example yee
cannot take 4 which is the diuiſoꝛ. out
of 3 5 therefoꝛe yee ſhall ſette 4 vnder 5
and ſay, howe many tymes 4 haue yee
in 3 5, ye haue 8 times 4, and there reſ=
teth 3. yee ſhall ſette the 8 betwyxte the
two lines, and the 3 aboue, then efface
the 5 and the 4: then ye ſhall ſet 4 vnder
o and ſay, in 3 0 howe many times 4.
7 times, ſette 7 betweene the lines at
the righte ſyde by the 8, and there reſ=
teth

steth 2, which yée shall set aboue 0, and
efface 0, then set 4 vnder 8, and say : in
28 how many times 4, 7 : and there re∕
steth nothing, set 7 betweene the lines
by the 7, then set 4 vnder 0, and say :
how many times 4 in 0, there is none,
therefore set 0 betweene the lines, then
shall yée say in 9 howe many times 4,
2 times, set than 2 betwéene the lynes,
and resteth 1, which yée shall set aboue
9 and efface 9, then say in 12 howe ma∕
ny times 4, 3 times, set than 3 betwéen
the lines by 2, & there resteth nothing:
Then in 3 which is the last figure, how
many times 4, no times : therefore at
the end of the figure yée shall set the 3,
thus 3, and all is done.

¶ An example.

		3	2			I			
A		3	5	6	8	6	2	3		3
C			8	7	7	0	2	3		40
B			4	0	0	0	0	0	0	
			4	4	4	4	4			

Example, when the deuisor is an ar∕
ticle, it behooueth to doe semblably, in
saying:

C

saying : in 3 howe many times 4, no
times, and therefore we shall set 4 vn-
der 5, and 0 vnder 0, and say : how ma-
ny times 4 in 35, 8 times , sette 8 be-
twéene the two lines vnder 5, & there
resteth 3, which ye shal set ouer 5. Thē
set the 3 that standeth ouer 5, and the 0
together, and that is 30, then say howe
many times 4 in 30. 3 and alwayes so
to the end. And then ye shal set 4 vnder
2, and 0 vnder 3, and say : in 12, in ta-
king the 1 that shalt rest of the sum be-
fore, and shal be aboue 9. and the 2 that
is after 9, howe many times 4, 3 tymes
4 then set 3 in the number of C against
2, & then shal ye cease, for there remay-
neth all, only 3 to be parted by 40, now
ye shal not make 0 vnder 3 as is afore,
but at the end ye shall set 3 thus $\frac{3}{40}$

	3	5 0	8	0	9	2 1
A						
C		8 3 3 2 6 0				4 1
		4 4 4 4 4 4				

Example, when the diuisor is com-
post, as in this figure afore, ye shal say,
in 3 that be neere A, how many times
4, that are in ȳ number of B, 8 times 4,
set that 8 betweene the two lines, in the
place of C, and there resteth 3, which ye
shal set aboue 5, and efface 35 of A, and
4 of B, then shall ye stay in multiplying
the 8 of C, by the seconde figure of B,
that is 2, ye shal say 2 times 8 been 16.
Then abate 16 do the number of A a-
gainst the same 4 5, & there be 3 which
is ouer 5 and of the number, that bee
worth 30, and ye shall say 1 of 30, a-
bate 16, and there resteth 14, of the
which 14 ye shal set 1 ouer 3, & efface
9, and 4 aboue 0 and efface 9, then shal
ye set the diuisor somwhat forward, the
4 against that shalbe effaced, and 2 a-
gainst 0, and say in 14 demonstring 1
that shal be aboue 3, & 4 aboue 0, how
many times 4, 3 times: lette the three
beneath the lines in the number of C,
and there resteth 2, which ye shall set
ouer 4, and efface 4. Then shall ye say
againe in multiplying the 3 of C by the
second of B, which is 2 : ye shal say then

2 times 3 in 6, and of that 8 is against
it, yee shall abate 6 and there shall rest
2, which ye shal set ouer 8 and efface 8,
and alwaies so vnto the end. And whē
yee come to the two last figures of A,
and that ye would diuide them by 42,
yee may not: for the first that is but 2,
shall bee effaced with 1 that standeth a-
boue 5; and because that yee may take
there nothing, yee shal set 0 against 2,
of A, in the number of C, betwene the
lines, and so it is doone, and there shall
rest 3 to bee deuided by 42, and that 3
shall be set at the ende of the particion,
and thus 3, and it is finished.

And it is to be known, that as many
figures as followeth the first figure in
the number of B, shall be multiplied by
them of the number of C, then the mul-
tiplication that thereof shall come, yee
shall abate in the number of A, as in
this example next following more
plainlie shall appeare.

$$7 8$$
$$8 7$$
$$2 2 5 7$$
$$2 2 5 7 8$$

A $$3 5 9 8 0 9 2 7 \quad 8808$$
B $$1 4 4 3 \qquad 24303$$
C $$2 4 3 0 8 3 3 5$$
$$2 4 3 0 0 0$$
$$4 3 4$$

$$3$$

The $$3 \qquad 5$$ **p2oofe.**

$$3$$

In this example in the number of B
that is the diuiſo2, bee many figures, ꝭ
therefo2e ye ſhal ſay in 3 of A, how ma
nte times 2 of B, 1 time, ſet that 1 vpon
C, and 1 that remaineth of 3 ouer 3, and
then ſhal yee come to the 4 of B, and to
1 of C, and multiply them in ſaying, 1
times 4 is 4, which 4 yee ſhall abate of
the number of A, in taking 1 aboue 3,

Ꞓ 3   and

and 5 after 3 ,that ſhal be woorth 15,and
therof ye ſhal abate 4 ,and there reſteth
11, and for the more ſhorteſt way,of 5
onely abate 4 ,and ſet the one ꝑ remai-
neth,aboue 5 ,and there reſteth alwaies
11,then ſhall ye come to the 3 of B, and
to 1 of C,and make all onely the multi-
plication,in ſaying, 1 times 3 is 3 ,then
of 10 abate 3 in demonſtring 1 ouer 3 ⸿
0 after ⸿ then there reſteth 7 ,which yee
ſhall ſet ouer 0 ,then becauſe of ꝑ cipher
0 may nothing come, ye ſhall leaue it ⸿
go to the next figure and ſay : 1 times 5
that is at the laſt ende of B beene 5 ,but
in ſomuch that we may nothing abate
of 0 that is againſt it in the number A,
ye ſhall borowe of the figure afore, that
is 8 onely one and efface the 8, and ſet
the 7 aboue the 8,and the 1 that ye ſhal
hold ſhall be woorth 10 to the regard of
the number that ye be in, then ye ſhall
ſay:of 10 abate 5 ,there reſteth 5 ,which
ye ſhall ſet aboue 0 ,then ſhal ye auance
our partour conſequently vnder the o-
ther figures folowing, ꝑ is to ſay, tyll
the laſt of B. be ſet vnder the laſt of A,
and then ye may not auaunce them any
further

further, becanse ye be come to the endes
of both the numbers.

The proofe of Dinision oz Particion
is made in this manner : Ye shall first
make a Crosse, as ye did befoze in mul-
tiplication, and abate the 9 of the Par-
ticion, and sette the rest at the left ende
of the Crosse semblablye of the thyzde
number that is betwirt the two lynes,
and set the rest at the right ende of the
same Crosse, and if there bee nothing
rest, set a 0. Then multiplye the two
numbers of figures, foz they 2 be digets
that one by that other, and therof abate
all the 9, if there be nothing in the first
number, oz if ye may not denide it, ioine
it with the same that shall come there-
of. And so the rest that may not make 9,
set it at the end vnder the Crosse. Then
shall yee come to the first number, and
semblably doo away the 9 thereof, and
set the rest aboue the Crosse, and if that
aboue and that beneath be like, the par-
ticion is good, oz if it be not, it is false.
And foz to vnderstand it better, we will
make proofes by the eramples befoze
sayde.

For the first, yee shall take the part four which is 4, and sette it at the left side of the crosse, then shall yee abate the 9 of the thirde number, and there resteth 8, which 8 ye shal set at the right ende of the Crosse, and multiplie it by 4 and thereof commeth 32, whereof resteth 5, then adioine them with the 2 farthinges that ye might not deuide, and they shall make 7, the which 7 ye shall set vnder the crosse, than shall ye abate the 0 of the first number that been the farthings, and there shall rest 7, which 7 ye shall set at the vpper ende of the Crosse, and so the two endes be both a like, which sheweth the proofe to bee well and truly made.

$$7$$

The 8 ✕ 4 proofe.

$$7$$

The end of Particion.

The

The sixt part called Reduction.

REduction is a kind of Algorisme, by the which ye bee taught to reduce numbers of lesse denomination or value, to numbers of more denomination or value, or if the case require it, numbers of great denomination to the numbers of lesse value. Example of the first, 20. li. 6 s. 44. d 10, far. Thus reduce farthings to pence, and the pence, to shyllings, and the shillings, to poundes and then thys summe is, 23. li. 6. s. 10. d and. 2. far, so haue you reduced the lesse summe to the more. Example to reduce the more to the lesse. Take the same example againe, and reduce the. 20. li. 6 3 s. 44. d. 10. far. all into farthings, and it wil make 22, 4. 10 farthynges, and it reducing the poundes to shyllinges, then to pence, and all that pence to farthinges, wherfore it shall be very necessary for you to know what thing your number doth signifie, whether waight money, measure, or tyme, and to be expert in all manner of accomptes; it shal

be

be neceſſarie for you to know all maner
of waights, comes, meaſures, and time.
Example in Engliſh mony, 4 farthings
make i. d. 12. d. maketh a ſhilling, 20
ſhillings maketh a pound.

In wayght, and firſt of Troy waight,
every pound hath 12 ounces, and every
ounce 20 peny wayght, and every pe=
ny wayght 20 graynes, &c.

The haberdepoys pounde, hath 16
ounces, an ounce 8 drammes, the
dramme 3 Scruples, the ſcruple 20
graynes.

Of meaſure, the yarde hath 3 foote,
the foote hath 12 ynches, the ynchen 3
barley cornes of length.

Of time, the yeare hath 3 6 5 dayes,
the day 24 houres, the houre hath 60
minutes, every mynute 60 ſecondes,
every ſecond 60 thyrdes, every thyrde
60 quartes, every quart 60 fiftes, eve=
ry fift 60 ſixtes, and ſo foorth infinitely

¶ To reduſt the more ſumme
to the leſſe.

When thou wilt reduce the more to
the leſſe, looke howe many tymes the
leſſe

lesse is contained in the moze, and by
that number multiplye the number of
the moze, and that that commeth of the
multiplication, sheweth the moze re-
duced to the lesse Example. I woulde
reduce 8 pence to farthynges, looke
how many tymes a farthyng is contay-
ned in a penye, and that is as ye knowe
4 tymes, then multiplye accozding to
the rule 8 by 4, and that maketh 32,
which be 32 farthynges, and so 8. d. ma-
keth 32 farthynges.

¶ An example.

Heere is a summe of 28. li. and. 6. s.
I would haue these poundes which is
of moze denomynation reduced to the
shyllinges, which be of lesse denomina-
tion: then looke firste howe oft a shyl-
ling is contayned in a pound, and that
is 20 tymes, so 20 maketh a li. mul-
tiply then the 20, li, by 20, thereof com-
meth 560, which be all shyllinges: to
this put the other 6 shyllinges, and so
all is 566 shyllinges. But ye shall note, that where there be
any summs of meane denomynacyons

<div align="right">betweens</div>

betweene the more to be reduced, and
the lesse, to whom reduction is made:
then shall it be easyer to reduce first the
more to the meane, and so by the meane
to the lesse.

The example. 43. li. 19. s. 20. d. 4. far-
thinges, if ye will reduce all these sums
to the farthynges: then shall it be better
for you to reduce the poundes firste to
shyllinges: and then beeing shillinges
to reduce them to pence, and at the last
to farthinges: so by your rule 43 pound
maketh 860 shyllinges, to that adde
the 19 shyllinges, it maketh 879, then
reduce thys 879 shyllynges to pence:
looke fyrst howe many pence are con-
tayned in a shylling, and that is to mul-
tiply 879, by 12, & therof commeth 10s
48 which be all pence, to this adde your
20 pence, & that maketh 10568 d. then
reduce these pence to farthynges, see
howe many farthynges be in a penye,
that is 4. multiply 10568 by 4 cometh
to 42272 to these adde the 4 farthinges
and that maketh 42276 farthinges.
Thus haue yee reduced 43 li. 19. s. 20. d
4 farthynges, the more by the meane to

¶ To reduce the lesse to the more.

First marke howe many tymes the more dooth, contayne the lesse, and by that number deuide the lesse, and the quocyent sheweth the lesse reduced to the more. Example. I woulde haue thys summe 600. s reduced into poundes, for how many times a pound dooth contayne shyllings, that is 20 times, then deuide 600 by 20 the quocient shall be 180 which be poundes so that 600. s reduced to poundes, amounteth 280 li. and so lyke wise in all other reckoninges.

When summes of diuers denominations come in addition to be added together, then beginning at the summes of least denomination, adde them euer together, tyll such time as they make a number of the next denomination, and that that remayneth not able to make any number of greater denomination, set it under the lyne, and procede to the next summe of greater denomination to the which adde the number of the same denomination reduced out of the

summe

summe before the lesse denomination, so
proceeding to the ende.

¶ An example.

a 680

b 29 7

c 008 3

¶ Beginne at the least which be far-
thinges, saying: 9 and 2 beene 5, and 3
beene 8 these 8 farthinges make 2 pence,
therfore take these pence, & adde them to
the next summe, which is of the same
denomination, saying 2 : and 10 be 12
which is 1 shilling, the 7 and 5 be 12,
which also maketh a shilling, so among
these pence yee haue 2 shillinges to be
added to the next order of shillinges,
saying: 2 and 3 be 5, and 9 is 14, put
the diget 4 vnder the lyne, and reserue
the article 1 to the next place, saying:
1 and 2 is 3, and 1 maketh 4 set that
4 vnder the lyne also, and then is it 44.
s. the which reduced to poundes ma-
keth 2. li. and 4. s. remayneth vnder
the tytle of shillinges: then put to that

2, li.

z, li. to the other poundes, and so hast
thou doone in reduction of the summes
of lesse value to the greatest summe
which be poundes. And this is suffici-
ently entreated of Reduction.

The ende of Reduction.

The seuenth part called Progreſſion.

1 2 3 4 5 6 7 8 9

Progreſſion sheweth the number
and when it beginneth at 1 or at 2, in
mounting alwaies by one, and one as
dooth this number 1 2 3 4 5 6 7 8 9.
Now if ye will know the valour of the
numbers, first ye must regarde two
thinges, that is to witte, if the number
proceede continually without leauing
any thing betwixt as if 1 2 3 4 5 6 7, or if
it leaue any thing betwixt as heere
1 3 5 7 9. Secondly ye must consider if the
number be euen or odde. And after these
two considerations, then by foure rules
that here followeth yee may knowe the
valour of each whole number,

The

The firſt rule is when one number proceedeth in mounting, alwaies continually in the beginning, then if it ende in an euen number, then ſhall yee take the halfe of that euen number, and by it yee ſhall multiplie the odde number that commeth of the euen number, as ye may ſée in this example folowing,

An example.

$$1 \quad 2 \quad 3 \quad 4 \quad 5 \quad 6 \quad 7 \quad 8$$

If ye wyll know how much this number is woorth, then multiply the halfe of 8 that is 4, and the number that is after 8 is 9, and then therof commeth 36, and ſo much is the ſumme woorth, and thus may yee doo with all ſuch like queſtions.

¶ An other example.

```
  1 2 3 4 5 6 7
+       The      7        4. proofe
  7
 ____
  8
```

Her proceedeth not continually, then it

For to multiply this number 7, which is the greateſt and the moſt halfe is 4, ye muſt multiplie 7 by 4, and it is 28, and ſo much is the whole ſumme.

The thirde is, if a number proceede not continuallie, and ende in an euen number, yee ſhall take the halfe of the ſayde number that is euen, and by him multiplie the ſame that is nexte comming after the ſame halfe, and in thys dooing yee ſhall haue the ſumme of the ſame number.

¶ An example.

```
  3 4 6 8        2
+ The  4 _____|_____ proofe.
```

F.   A

If ye will knowe howe much thys number is woꝛth, then take the halfe of 8, that is 4, then multiply by the 4 the number which folow
eth, that is 5 in ſaying: 4 times 5 is 20, & ſo much is woꝛth the whole ſumme.

The fourth is whan the ſaide number pꝛoceedeth not continually, then if it end in an odde number, yee ſhall take the halfe of the ſayde number that is odde, and multiply it by it ſelfe.

¶ An other example.

1857

The 4 proofe.

16

If yee will knowe how much thys number is wooꝛth, then take the greater halfe part of 7, which 7 is thee odde number, & the greater is 4, then multiplie the ſame 4, by himſelfe in ſaying: 4 times 4 is 16, and ſo much is wooꝛth the ſayd number. And thus may ye doo with

with any other ſuch like queſtions.

Yet is there an other progreſſion,
and it is alſo a manner of duplication,
as heere after ſhall appeare.

1 2 4 8 16 32

Now if yee deſire to make a ſumme
of theſe, doo nothing els but double the
laſt figures, as 32 & 32 is 64, and ther-
ſubſtract 1, and there reſteth 63, and
that is the ſumme, and it is done.

¶ The end of Progreſſion.

The rules of Fractions.

IN Fractions there be two manner
of numbers, whereof the firſt is cal-
led the Numerator, for hee ſheweth the
number of the denominator, that ſtan-
deth vnder him. The other is called the
denominator, for hee ſheweth euer
how much the part is, and ſtandeth
vnder the Numerator, and yee
may make betweene them both a lyne
if pleaſe you, as appeareth in theſe
examples following.

F 2.   Seuen

Seuen by 9 parted, yee shall set thus $\frac{7}{9}$

And 1 by 2 parted thus $\frac{1}{2}$ and

And 1 by 4 parted thus $\frac{1}{4}$

Of Numeration.

Numeration is the firste espec
and it is nothing else but th
yee must euer sette the lesse summe
bone, and the moze summe vnderneat
as by these examples folloroynge
showed.

2   6   8   3   4   6
9   3   7   10   6   9   8

Of Addition.

If yee will adde two, oz thzee,
fowze bzoken numbers togeather
yee must marke whether the num
bers bee of one denomination as the
$\frac{1}{3}$ and $\frac{1}{3}$ if they be all of one name,

adde them togeather, in saying: 1 and 2 is 3, set y 3 aboue 3, ε that is 1 whole. Now adde $\frac{1}{5}$ $\frac{4}{5}$ and $\frac{3}{5}$ together, ε set them thus $\frac{9}{5}$ they make 1 and $\frac{4}{5}$.

Nowe will yee adde broken vneuen numbers $\frac{2}{3}$ to $\frac{3}{4}$ them multiplye them crosse wise and say: 3 times 3 is 9: and 2 times 4 is 8, adde that 8 to 6, and it is 17, then multiply the numbers toge-ther in saying: 3 times 4 is 12, set that 12 vnder 17, as thus $\frac{17}{12}$ that is 1 ε $\frac{5}{14}$.

When there cōmeth moze bzokē nume-bers then 2 at once, as in this exam-ple, if you would adde $\frac{5}{4}$ $\frac{5}{6}$ to $\frac{4}{5}$ then make the 2 first numbers after the rule afozesaid, ε it commeth to $\frac{14}{24}$. Nowe ad-24 to 5 ε multiply them a crosse wise in saying 5 times 37 is 190, the 4 times 24 is 96 thereto adde 190 commeth to 286 set them aboue the lyne, then mul-tiply 5 with 24 commeth 120, set them

vnder the lyne, and they stand thus 2 $\frac{86}{120}$

that is 2 and $\frac{4}{120}$. Now adde me 1 and $\frac{3}{5}$

to $\frac{7}{5}$, then say 2 tymes 3 is 6, & 5 times 1 is 5 adde them together, for the tellers, and set it aboue the lyne, then multiply the two numbers together in saying, 2 times 5 is 10, se that 10 vnder 11 as thus $\frac{11}{10}$. Now adde 11 to 4 multiply them crosse twyse, lyke as ye dyd in the example before, and yee shall haue 1 $\frac{17}{70}$

which is 1 and $\frac{74}{76}$ and thus ye shall doo with all other.

Of Substraction.

Will you substract a broken from broken, then yee muste marke whether the numbers of the same broken be lyke in denomynacion or not, and if they be lyke of name, then euen substract the lesse teller out of the moze, and sette the number vnder the teller. As for example, if yee will substract 5 from

5 from 7 the subtract the vppermost 5
out of 7 and there resteth 2, sette that 2
aboue 12 as thus 2 that is 2 but when
there commeth broken & broken num-
bers as these 6 fro 5 then multiply both

the nūbers together in saying 6 tymes
13 is 78. Then multiply crossewise the
numbers with the tellers in saying : 13
times 5 is 65 from 9 times 9 is 54, now
subtract 54 from 65 and there resteth
11, ȝ 11 set aboue 78 as thus 11. Now
wil ye subtract 34 from 65 breake each
together & commeth to 13 and 22 then
multiply the nūber in saying 15 times
12 is 180, then multiplye them crosse
wise in saying 12 times 22 cōmeth 264
then say 15 times 13 cōmeth 195, now
subtract this 195 frō 264. & there resteth
69, which 69 set aboue 180, as thus 69
and it is done.

6 from 0 is 39   3 from 4 is 12

Of

IF yee will multiply 7 with 16 then
multiplie the vppermost fygures toge-
ther in saying : 6 times 13 is 78 , then
multiply the neather most together , in
saying : 7 times 16 is 112 the which ye
shall set thus 87 that is 30: Now wil ye

multiply broken with the whole: as
with 6 then say : 2 times 6 is 12 and 5
times 1 is 5 set them thus 5. And whē
that the vppermoste number is more
then ꝑ neathermost, then ye shall deuide
it with the neathermost , and that that
commeth therof is ꝑ whole, as thus: de-
uide 2 with 5 cōmeth a hole 2. Now
wil ye multiply the whole and 5 brokē
with ꝑ broken as 7 5 with 5 then mul-
tiply them with. 4

7 commeth 28, ᵹ ad 3 therto cōmeth 4
Now make it after the first rule in say-
ing 5 times 3 1 is 155. ᵹ 4 times 8 is 32:
set them thus 155 that maketh 4 27 and
it is done. 32

1 and 1 is 11   2 and 6 is 12
1 al 4 12   3 al 0 24

Of Fractions.

Of Diuision.

THe number that yee will deuide set
euer at the left hand, & that yee will
deuide withall, setts at the right hand.
As when ye will deuide 4 with 2 And

ye shall multiply the broken crosse wise
in saying: 3 times 4 is 12, ý is the whole
ý ye wil deuide, then multiply 5 with 2
commeth 10, that is 12 maketh 12. And
when that ye will deuide broken with
whole, as 5 with 4, then set your frac-
tion and whole thus 21 nowe multy-
ply 1 with 3 that is the whole which
must be deuided, then multiply 4 with
7, and it maketh 28, which must be set
thus 3 and it is done. But if ye may de-
18
uide the teller iust with the whole, that
were lighter, as 18 in 6 whole, therfore
19
deuide 18 is 6 maketh 3, the which yee
shall

ſhall ſet thus $\frac{3}{18}$. Nowe will ye know $\frac{2}{3}$

what broken of broken is, as 3 of 4

Fyrſt ye ſhall multiply the vppermoſt fygures one with an other, ſaying 2 tymes 3 is 6, and then the vppermoſt in ſaying 3 tymes 4 is 12, that maketh 6 that is 11. Item 6 of 128 $\frac{2}{3}$ multiply $\frac{12}{12}$ $\frac{3}{2}$ $\frac{2}{7}$

128 with 3 and adde there 2, commeth 386 which ſet thus 386, then multiply them with 6 commeth to 2326, then multiplye the vndermoſt altogether ſaying 3 tymes 7 is 21. and 2 times 21 is 42, therewith deuide 23 16, and it is done.

¶ The ende of the rule of Fractions.

A

A Table very neceſſarie for Multiplication.

1 times	1	maketh	1
2	2		4
3	3		9
4	4		16
5	5		25
6	6		36
7	7		49
8	8		64
9	9		81
10	10		100

2 times	3	makes	6
2	4		8
2	5		10
2	6		12
2	7		14
2	8		16
2	9		18
2	10		20

3 times	4	makes	12
3	5		15
3	6		18

3	7		21
3	8		24
3	9		27
3	10		30

4 times	5	makes	20
4	6		24
4	7		28
4	8		32
4	9		36
4	10		40

5 times	6	maketh	30
5	7		35
5	8		40
5	9		45
5	10		50

6 times	7	makes	42
6	8		48
6	9		54
6	10		60

7 times	8	makes	56
7	9		63
7			7

7   10   70   4   52

8 times 9 makes 72   5   65

8   10   80   6   13   78

9 times 10 make 90   7   91

1 times 11 make 11   8   104

2   11   22   9   117

3   11   33   130

4   **times 14 make** 14

5   28

6   66   3   42

7   77   4   56

8   88   5   75

9   99   6   14   84

10   100   7   90

1 times 12 make 12   8   112

2   12   24   9   126

3   36   10   140

4   48   **1 times 15 make** 15

5   60   2   30

6   72   3   45

7   84   4   60

8   96   5   75

9   108   6   15   90

10   120   7   105

1 times 13 make 13   8   120

2   26   9   135

3   39   10   250

                1 times

1 times 16 make 16			5		18	96
2		32	6			90
3		48	7			108
4		64	8			126
5		80	9			144
6	16	96	10			162
7		112	1 times 19 make 19			
8		128	2			38
9		144	3			57
10		160	4			78
1 times 17 make 17			5			95
2			6		19	114
3		34	7			133
		51	8			152
4		68	9			171
5		85	10			190
6	17	102	1 times 21 make 21			
7		119	2			42
8		136	3			63
9			4			84
10		170	5			105
1 times 18 make 18			6		21	126
2		36	7			147
3		54	8			168
4		72				

9

9		189	1	172
10		210	4	96
1 times 22 make		22	5	120
2		44	6	144
3		64	7	168
4		88	8	192
5 times 19 make	22	110	9	216
6		132	10	240
7		154	1 times 25 makes	25
8		176	2	50
9		198	3 times 17 make	75
10		230	4	100
1 times 23 makes		23	5	125
2		46	6	150
3		96	7	175
4		92	8	200
5 times 21 make	23	115	9	225
6		138	10	250
7		161	1 times 26 makes	26
8		194	2	52
9		207	3 times 18 make	78
10		230	4	104
1 times 24 makes		24	5	130
2		48	6	156

9

7		182	4				116
8		208	5		29		145
9		234	6				174
10		260	7				203
1 times 27 make 27			8				222
2		54	9				261
3		81	10				290
4		108	1 times 31 makes 31				
5		135	2				62
6	27	162	3				93
7		189	4				124
8		216	5				155
9		245	6		31		186
10		279	7				217
1 times 28 makes 28			8				248
2		56	9		34		279
3		84	10				310
4		122	1 times 32 makes 28				
5		140	2				64
6	28	168	3				96
7		196	4				128
8		224	5				166
9		252	6				192
10		280	7		32		224
1 times 29 make 29			8				256
2		58	9				288
3		87	10				320

The Table.

1 times 33 make 33	8	280
2	66	9	310
3	99	10	355
4	132	1 times 36 make 36
5	165	2	72
6	33	198	3	108
7	231	4	144
8	264	5	180
9	297	6	36	216
10	330	7	252
1 times 34 makes 34	8	288
2	68	9	324
3	102	10	360
4	136	1 times 37 make 37
5	170	2	74
6	34	204	3	111
7	238	4	148
8	272	5	185
9	306	6	36	222
10	340	7	259
1 times 35 make 35	8	296
2	35	70	9	333
3	105	10	370
4	140	1 times 38 make 38
5	175	2	76
6	210	3	114
7	35	245	4	152

	38	190	238	23	529
	78	228		24	576
	79	266		25	625
8	388	304	26	26	676
9		342	27	27	729
10		338	28	28	784
1 times 39 makes 39			29	29	841
2		78	31 times 31 make 961		
3		117	32	32	1024
4		156	33	33	1089
5	39	195	34	34	1156
6		234	35	35	1225
7		273	36	36	1296
8	39	312	37	37	1396
9		351	38	38	1444
10		390	39	39	1521
11 times 11 make 121			41 times 41 mak 1681		
12	12	144	42	42	1764
13	13	169	43	43	1849
14	14	196	44	44	1936
15	15	225	45	45	2025
16	16	256	46	46	2116
17	17	289	47	47	2209
18	18	324	48	48	2304
19	19	361	49	49	2401
21 times 21 mak 441			51 times 51 mak 2601		
22	22	484	52	52	2704

53	53	2809	77	77	5929
54	54	2916	78	78	6084
55	55	3035	79	79	6241
56	56	3136	81 times 81 mak.		6561
57	57	3249	82	82	6722
58	58	3364	83	83	6889
59	59	3481	84	84	7056
60 times 61 mak.		3721	85	85	7225
62	62	3844	86	86	7396
63	63	3969	87	87	7566
64	64	4096	88	88	7744
65	65	4225	89	89	7921
66	66	4356	91 times 91 mak.		8282
67	67	4489	92	92	8466
68	68	4924	93	93	8649
69	69	4761	94	94	8836
70 times 71 make		5041	95	95	9025
72	72	5148	96	96	9216
73	73	5329	97	97	9405
74	74	5476	98	98	9604
75	75	5625	99	99	9803
76	76	5776			

The end of the Table for Multiplication.

¶ Heere followeth the Rules, and first the rule of three.

Multiply by the contrary and deuide by the semblaunt, or like. Thys rule may bee vnderstood in two manners. Fyrst multiply the same that yee wyll buy by his contrarye, that is to witt by the price, and deuide by the semblant, that is to witt, by as much as yee haue bought, or thus: Multiplye the price by his contrary, that is to wytte, by the same that thou wilt buy, and deuide it by his semblaunt, that is that same that ye haue bought. And note ye why it is called the rule of three, for with three numbers certaine yee maye knowe and finde the fourth number vncertayne. And it is a rule right notable and necessary in the fact of marchaundise. For to haue knowledge of this rule, it behoueth to set some rules different in manner of questions, and in measures long.

¶ The rule of whole numbers.

If 9 elles of cloath coste 27 crownes, how much shall coste 1 ? by the price. An

The Rules.

fwer. It behooueth you to fée the fum, that is to wit 23. crownes. And than yee shall multiply by his contrary, that is to wit, by 15, that is 375. & then deuide them by that femblant, that is to wit, by 9, & thereof cōmeth 41 crownes and an halfe, and there remaineth one crowne and an halfe, the which ye shal make in s. and there be 54 s. the which yee shall deuide by 9, and thereof commeth 6. franks, Therefore ye may anfwere, that the 15 elles, shall cost 41 crownes and an halfe and 6 franks.

Now, if yee wil make the proofe, it behooueth you to forme your question in this fort; If 15 elles cost 41 crownes and an halfe, and 6 shillings, how much shall cost 9 elles by the price. Then it behooueth you first to multiply the 6 s. by 9, and that is 54, then it behooueth you to make thereof crownes, that is, one crowne and an halfe, and then yee shall multiply 9, and they make 373. crownes and an halfe, and then sette thereto 1 crowne & an halfe, and they make 375 crownes, which ye shall deuide by 15, that makes 25. the which

25 is

25. is the price of 9 elles, and so the rule
is good. And thus you may doo with all
other likewise.

The second rule of whole number,
with numbers broken
semblable.

IF 10 ells and 2 thirde parts of cloth
cost 35 franks, how much shall cost
14 ells by the price? Answere. For to
know this rule & other semblable, it be-
houeth you to reduce the elles bought,
and thē that ye wil buy all into thirds,
because of them that be bought, in say-
ing thus: 3 times 10 is 30, & set there-
to 2 thirds, that is than 32 thirds. Thē
it behoueth you to make deuison by 32,
and then ye shall reduce the 14 ells in-
to 1 third, in saying 3 times 14 is 42.
Then 42 shall be the multiplicatour.
Now set the summe, that is to wit 35
franks: the which multiplied by 42, be
1470, the which deuided by 32 thereof
commeth 45 franks and an halfe, and
there resteth 14 franks, the which yee
shall reduce to shillings, & than deuide
them by 32, and thereof commeth 8 s.

and

and an halfe, and then shal ye make thē
in pence, and deuide them by 32, and
thereof commeth 3 pence, therfore yee
may aunswere that the 14 ells of cloth
shall cost 45 franks and an halfe, 8 s.
and an halfe and 3 pence.

For to make the proofe, it behoueth
you to make your worke by the con-
trary, for it behoueth you to multiplie
the samme that the 14 elles cost, by the
deuisor, and deuide it by the multipli-
catour. Therefore set the samme vpon
the left side, and first multiply the 3 d.
by 32, and when they be multiplied, ye
shall make of them shillings, and then
yee shall multiply the 8 s. and the halfe
by 32, and then make thereof franks.
And then yee shall multiply the 45 fra.
and the halfe by 32, and deuide them
by 42, and so yee shall know if the rule
be well made.

The third rule of whole numbers, with diuers minutes.

IF 4 ells and 2 thirds of cloth cost 10
crownes, how much shal cost 6 elles
and

and 2 quarters by the price? For to know this rule, it behoveth you first to reduce the 4 elles and 2 thirdes thus, 3 times 4 is 12. And then ye shal adioine the 2 thirdes, and than it is 14. & then the elles that ye wil buy, ye shal reduce them into one fourth thus: 4 times 6 is 24, and then set the 2 quarters therto, and than there is 26 quarters. And than ye shall multiply that one by that other, that is to witte the numbrant of the first by the denominant of the second, in saying: 4 times 14 is 56. And that 56 shall be the divisor. Then multiply the numbrant of ye second, by the denominant of the firste, in saying. 3 times 26 is 78 and that 78. shalbe the multiplicatour. And therefore set 10. crownes and multiply them by 78. & devide them by 57. and yee shall finde that the 6 elles and 2, quarters cost 13. crownes and an halfe 15. shyllings & 5 pence. And there resteth, 8.

The

The example.
Diuiſor.   M.
59   142 242 78
10 crownes 146
4

If 4 elles 2 coſt 10. crownes, 6. elles
4 ſhal coſt. 13. crownes and an halfe. 15
ſhillings. 5. pence, there reſteth 8.

For to make the proofe, it behooueth
you to worke the contrarye, you muſte
multiply the ſum by the diuiſor that is
to wyt, by 59. and make diuiſion by the
multiplicatour, that is to wit by. 78 &
ye ſhall finde. 10. other wiſe if there be
moze oz leſſe, the rules be falſe.

¶ The fourth rule containing whole
numbers to the merchandiſe that yee
haue bought, and minutes to the ſame
that yee will buy.

IF 8 ells of cloth coſt 15 crownes,
what ſhal 2 quarters coſt by y price?
For to know this rule, ye muſt reduce
the 8 elles into quarters, in ſaying, 4
times

times 8 is 32, then 32 shall be the deui∣
so2, and the 2 quarters shall be the
multiplicato2. Now set the 15 crownes
and multiply them by 2 quarters, and
deuide by 32, and ye shall finde that the
2 quarters cost o crownes, and the halfe
15 shillinges and an halfe 3 pence. Fo2
to make the p2oofe ye must woo2ke the
contrary, fo2 ye shall multiplie the sum
that the 2 quarters cost, that is to wyt
o crownes, & the halfe 15. s. and an halfe
3 pence by 32, and deuide them by 2.

The rule of round measures that is
to wyt, measure of corne, of
wine, and of oyle.

First it behoueth you to p2esuppose
and know the measures of co2ne.
One is woo2th 12 septiers.
One septier is woo2th 4 minutes.
One mynut is woo2th 3 bushels.
One bushell is woo2th 4 quarters.
    ¶ The measures of wine.
One muy of wine holdeth 36 septiers. *36 gallons*
The septier holdeth 4 quartes.
The quart holdeth 2 pyntes.
                          The

The pynte holdeth 2 choppynes.
The choppyne 2 halfe septiers.
The halfe septier 2 poffons.

¶ The fyrſt rule.

If the muy of coꝛne coſt 19 franckes, how much is wooꝛth the buſhell. Anſwer. Foꝛ to knowe this rule, ye muſt know how many buſhels is in 1 muy. Therefoꝛe multiply the muy by 12, and than by 4, and than by 3, which commeth to 144 buſhels, the which ſhall be the deuiſoꝛ of 10 francꝛ, therfoꝛe deuide 10 by 144. And thereof commeth 1. s. 4. d. and an halfe, reſteth 24. pence Therefoꝛe the buſhell coſteth. 1. s. 4. d and an halfe, reſteth 24. d.

¶ The ſecond rule.

To the contrary, if the buſhell coſt 1 s. how much ſhall coſt a thouſand and 4 hundꝛeth muys by the pꝛice. Anſwer. Foꝛ to knowe thys rule, it behoueth you to make all the Muys in buſhels. And there be 201900 buſhels, ẏ which it behooueth you to multiplie by 2, and there be 403200, and of them ye ſhall make

make crownes. Therfore peulde by 36
and there been 1200 crownes. There-
fore ye may answer, that if the bushell
cost 2. s, a thousande and 4 hundreth
muys shall cost a leuen thousande, and
2 hundreth crownes, and thus ye may
doo of all other semblable.

¶ The thyrd rule.

If the septier of corne be woorth 1 ſʒ
and the loafe of peny torneis, waight 12
ounces, how much ought it to weygh
when the septier is woorth 15 torneys.
Answer. Multiply ẏ first number by the
second, that is to wyt, 20 by 12 and de-
uide it by 15, and ye shall finde that it
ought to weygh 16 ounces. And thus
ye may do of all other lyke.

If the muy of wyne be woorth 12
francʒ, how much ought the pynte to be
woorth. Annswere. For to knowe this
question, it behoueth you to reduce the
12 muys into septiers, from septiers
into quarters, and from quarters into
pyntes, and they be 188 pyntes. And
than ye shal reduce the 12 francʒ into s.
that is 240, and that into pence, that
beens

been 2880, pence, the which behoueth you to deuide by 288, and it commeth to 10. d. Therefore if the muy of wyne cost 12 francȝ, the pynte is worth 10. d. But it is requisite that the Tauerner haue some gaynes. If he sell 12. d. the pynte, I demaunde how much shall he win vpon the muy. Answer. He selleth it 2. d. more then it is worth, therefore multiply 288 pyntes by 2, and they be 576, the which yee may deuide by 12. and there shall be 48. s. Therefore may ye aunswer that he getteth 48. s. vpon the muy.

If the muy cost 10 francȝ, how much is woorth the pynte. Aunswer. It behooueth you to doo as is aboue sayde, and ye shall fynde that it is woorth 8. pence and one third.

If the pynte cost 6 pence, how much shal cost 12 muys by the price. Answer. It behooueth you to knowe how many pyntes be in a muy, that is 288, multiply 12 muys by 288, that is 3456 pints. And than multiplie the pintes by 6, that is 20736, which summe ye shall make s. by deuision, and there beene

1072 8. s.

10728. s. and of shillings ye shall make francz. Therefore ye shall make deuision by 26, yee shall fynde 8 francz. 8. s. Therfore ye may aunswer that the 12. muys shall cost 86 francz. 8. s.

¶ Inso much as competentlie we haue treated of the rule of three in the fapct of measures, it is expedient that we treate therof in the fapct of weight.

If an hundreth pounde of pepper cost 20. s. how much shall cost 6 pound by the price? Aunswer. For to knowe this question, ye must multiplie by the contrarie, and deuide by the semblant, that is to wit, multiplie by 6 and deuide by 10, and ye shall finde that the 6 pounde shall cost 1 francz and 4. s. To make the proofe ye must multiplie by 100, and deuide by 6. Now I demaund if the 6 pounde cost 1 franc. 4. s. howe much is woorth the ounce. For to knowe this ye shall make the poundes in ounces, the which beene 96 ounces, and then make ὕ money in pence the which

beene

beene 288. d. the which ye shall deuide
by 95, and thereof commeth 3 pence,
therefore the ounce shall cost 3 pence.

If one pound of Saffron cost 3 franc,
and an halfe, how much is woorth the
ounce? Aunswer. It behooueth you to
knowe that in a pounde is 16 ounces,
therfore deuide the 3 francz & the halfe
by 16, and ye shall finde that the ounce
is woorth 4. 84. d. and an halfe, and thus
ye may doo of other like.

If 4 pounde of saffron cost 26 franc.
6. s. 8. d. how much shall coste 3 quar-
terns by the price? For to knowe this
rule, ye shall reduce the 4. l. into thirds
and shall say 3 times 4 is 12 and 1 third
been 14, then ye shall multiply by 4, and
shall say : 4 times 14 been 56 the deui-
sor, then for the seconde nomber yee
shal say: 3 times 3 is 9 fourths or quar-
ters, the which 9 shalbe the multiplier.
Now set the 16 francz. 6 s. 8. d. tournois,
and multiplie them by 6 & deuide them
by 16, and thereof commeth 2 franc, and
an halfe. 2. s. 6. d. Therefore ye may an-
swer that the 3 quarterns shall coste 2
franc and an halfe 2. s. 6. d. For to make
the

the proofe, ye must worke by the contra-
ry in multiplying by the venitor, that
is to wit by 56, & make division by 9,
and so ye may doo of other semblable.

¶ If one pounde of tyn cost 9 blances,
how many hundreth shall I haue for a
thousand and 4 hundreth franc. It be-
hooueth you to knowe howe much is
woorth the hundreth by 9 blances the
pound. And ye shall finde that there is
11 franc and an halfe. Now make divi-
sion of 1400 francks by 12 francks and
an halfe, ye shall finde 112. Therfore ye
may say that I shall haue 112 pound of
tyn for 1400 francks. And also as ye
haue made this rule, ye may doo in all
other marchandises, as in leade, yron,
spices, pepper, suger. And as ye haue
done of poundes, ye may doo of quar-
terns, ounces, and all other weightes.

¶ A rule without time.

Three Marchauntes put theyr mo-
ney together for to haue gaines, the
which haue bought such marchaun-
dise as hath cost 125 franc. whereof the
first

first hath laid 25 francz. The second 64
s. and the thirde. 46. s. And they haue
gotten 54 franc. of cleare gaines. I de-
mannd how shall they deuide it, so that
each man haue gaines according to the
money that he hath layd downe. Ann-
swer. In all such rules and questions
ye shall multiply each one after the mo-
ney that he had layd, therefore multiply
the gaines for the first by 25, and deuide
by 125, that is the deuisor common. For
the second, multiply the gaines by 64,
and deuide by 125 the diuisor common.
And for the third, multiplie the gaynes
by 56, and deuide by 125 the diuisor co-
mon. And for to finde the diuisor com-
mon, ye shall set together the multipli-
catours, that is to wyt 25, 64, and 36,
which is 125 the diuisor common. And
so shall ye doo in all rules of company.
Now ye may finde & knowe how much
each one hath of gaynes, and yee may
see it by the example here present.

The first hath 10 fz. and halfe 2 s. The
seconde hath 27 franc. and halfe. 2. s.
and halfe 5 d. and halfe, resteth 2 d. and
halfe. The thirde hath 15 franc. and an

halfe

halfe s.s. resteth o pence.

2 5 6 4 3 6.

Multiplicatours. Divisor.

And they haue yet to bee deuided a mong them of rests 62. d. and an halfe.

For to make the proofe, it behooueth you to deuide the rests, and then reduce altogethers, and ye shall finde the sum deuided, for all the rules of companie, béene proued by addition of sums.

The second rule of whole

F Oure Merchants lay money toge ther for winning for a certain time, of whom the first hath layd 10 s̵. for a yéere. The second, 20 s̵. for 3 yéere. The third, 160 fran. for one yere. And the fourth hath layd 40. francks for 4. yéere, and they haue gained 454 fran. I demaund howe much each one ought to haue of winning after the mony that he hath layd, and after the time that hée hath holden his money in gaine for the pany. Answers. For to knowe thys rule and other semblable, ye shal mul

V.   tiplie

tiplie the money that each one hath laid
by the time that he hath holden in com-
panie. Example. The first hath layde
10 frankes for 2 yeeres , therefore it be-
hooueth you to multiply 10 by 2, in say-
ing 2 times 10 is 20. For the second 3
times 20 is 60. For the third, 1 tyme
100, is an 100. For the fourth, 4 times
40 is 160, and then it behooueth you to
finde a deuisor common , for each hath
his multiplicatour, that is to wit, the
same that he hath layd : and for to finde
it, ye shall set together all the multipli-
cators, that is to wit, 20, 60, 100, 160,
the which maketh 340, therefore these
340 shall be the deuisor common to all,
then howe much euery one ought to
haue, yee may see by the example heere
following 45 48.

The first hath 26 frankes and halfe
4. s. one penny, resteth 140 d.

The second hath 80 frankes, 12 s. 4 d.
rest 80 pense.

The third hath 134 frankes, 18. s.
pence, rest 20 pence

The fourth hath 3 13 frankes, and a
halfe 4. s. an halfe 5 d. rest 100 pence.

20. 60. 100. 160. 340.

Multiplicatours, Diuisor.

Of rest they haue to diuide one penny.

The rule of company, whereas is whole time, and part of time.

Thꝛee Marchants lay mony in companie foꝛ to haue gaines thereby, of whom the first hath laid 3 0 francks foꝛ two yeeres: The second hath layde 4 0 francks foꝛ one yeere and thꝛee months: And the third hath layd 6 0 francks foꝛ thꝛee yeeres and two monethes. And they haue gained with this money 44 francks. I demaund how they shall deuide it, to the ende that each one haue his right after the money, and the time that they haue set & bolden foꝛ to gaine. Aunswere. Foꝛ this rule and all other semblable, yꝰ shal multiply the time by the money, as wee haue layde aboue. But foꝛasmuch as there be moneths, yꝰ must sette and reduce all the time of each one in moneths, and also if there were any dayes, yee shoulde set all the

P 2.   time

time in dayes. The first hath layde 30
franks for two yeeres, in two yeeres is
24 moneths : therefore multiply 30 by
34, there beene 720, and this 720 shal
be the multiplicatour of the first. The
second hath layd 40 franks for 1 yeere
and three moneths, in one yeere beene
twelue moneths, and three more, ma-
keth 15 moneths: multiply 40 by 15,
they make 600, which is the multipli-
catour of the second. The thirde hath
layd 60 franks for three yeeres & two
moneths : in three yeeres is 36 mo-
neths, and 2 maketh 38 moneths. Now
multiplie 60 by 38, and they bee 2280,
which shall be the multiplicator of the
third. Now for to haue a deuisor com-
mon, yee shall set together all the mul-
tiplicatours, that is 3600 the diuisor
common. They haue to deuide 44
franks. The first hath 8 franks, & halfe
6. s. rest 0. The second hath 7 frankes,
6. s. and halfe, rest 0. Thirde hath 27
frankes, and halfe 7 frankes 4. pence.
rest 0.

720. 600. 2280.   3600.

Multiplicatours.   **Diuisor.**

A

A rule of diuers siluer, and
diuers times.

THꝛee Marchants haue made com-
panie together, of whom the first
hath layde 10 franks 4 shillinges foꝛ 2
monethes: The seconde hath layde 15
franks foꝛ one yeere: and the third hath
laid 6 franks 7 s. foꝛ 8 monethes, and
they haue gotten of this money 24 fra.
How they shall deuide it after the mo-
ney, and after this time, I demaunde.
Answer. Foꝛ to know this rule and al
other semblable, it behooueth you to re-
duce the money of euery man into shil-
lings. And all the time in monethes,
and then multiply the mony by the time.
Example. The first hath layde 19 fran.
that is, 200 s. and 4 is 204, the which
yée shal multiply by 2 moneths, & they
shall bee 408 the multiplicatour of the
first: The second hath laide 15 franks
foꝛ one yeere, and in 15 franks beene
300 s. and in one yeere is twelue mo-
neths, therefoꝛe multiply 300. by 12,
and there shal be 3600 the multiplica-

V 3   tour

tour of the second: The third hath layd
6 franks 7 s. and in 6 franks is 120 s.
and 7 beens 127. s. for eight moneths,
therefore multiply 127 by 8, and they
shall be 1016 the multiplicatour of the
third. And for to haue the deuisor com-
mon, yee must reduce together all the
multiplicatours, and that shall bee the
deuisor common, as yee may see by the
example following. They haue 24. s.
of winning.

The first hath 2 franks and halfe 8. s.
and halfe 5 pence, and halfe, resteth
1360 pence.

The second shall haue 17 franks 3 s.
and halfe d. resteth 1952 pence.

The thirde shall haue 4 frankes and
halfe, 7 s. o d. & half, resteth 17112. d.
408. 3600. 1016.   5024.
Multiplicatours.   Deuisor.
And 1 d. is to deuide of the rests.

For to make the proofe, yee shall re-
duce together the three summes that
they haue hed. And if there be more or
lesse, the rule is euill made.

The t

The rule of company of Factours with Marchants Seruants.

Of this rule of Factours yee may make 3 rules in manner of questions that fall among Marchants. Example. Eight Marchannts, fiue Factors, and 3 seruants or varlets, haue made companie together, & haue cleerly gotten 150 franks: wherof the Factors ought to haue ½ halfe of the Marchants, and the seruants the third part of the Factours, how shall they deuide these 150 franks. Aunswere: For all such rules and questions, it behooueth you to find a number wherin is an half and a third: and that shal be 6, and this 6 shal be for the Marchant. And ½ halfe of 6 is 3, that shall be for the Factours, and the third part of the Factours is 1, which shall bee for the seruants. And then yee shall multiply the one by the other, that is to wit, the personage by their number, sixe times eight, is fortie and eyght: and this 48 shall bee the mul-

multiplicatoz of the Merchants. And
then there is 5 Factozs, that haue 3,
and 3 times 5 is fifteene, and thē there
be thzee seruants that haue 1, and one
times 3 is thzee : and therfoze the Fac-
tozs shall yee multiply by 15, and the
Seruants by 3.

Nowe, foz to finde the diuisoz com-
mon, yee shall set together all the mul-
tiplicatozs, that is to wit, 48, 15, 3,
which be 66. Thele 66, shal be the de-
nisoz common. Example. They haue
to deuide 150 franks.

The Merchants haue 109 franks. 1.
s. and halfe 3 d. and halfe, resseth 12. d.

The Factozs haue 34 franks, 1. s.
and halfe 3. d. and halfe, resseth 21. d.

The seruants haue 6 franks, ⁊ halfe
6. s. 4. d. rest 24. pence.

     48. 15. 3.   66.

Multiplicatours.   Deuisoz.

They haue to deuide 1 peny of ress.

Foz to make ẏ pzoose, ye shal deuide
all the ress by the deuisoz common.
And then yee shall reduce altogether,
foz to haue 150 franks.

                                The

The Rule of Factours, the which got
the halfe of the gaine and of
the principall.

An other rule in manner of a questi-
on. A Marchaunt hath giuen 50 franc.
to his Factour, by such couenant that
he gouerne them for tenne yeares. And
at the ende of the time, that is to witte
at the ende of ten yeares they shall de-
uide the gayne and the principall. It
happeneth that the Factour will goe
his way at the end of 6 yeares, and he
findeth that he hath gained a thousand
fran. I demaund how ought the sayde
Factour to be payde, and howe much
ought the sayd Marchant to haue? An-
swer. Ye ought to regard howe much
he should haue gained in those 10 yeres
that he shoulde haue holden them in
gaine as he had promised. Therefore
ye may forme the question: if 6 haue
gotten a thousand, how much shall be
the gaines of 10. Multiply 1000 by 10
and deuide by 6, and ye shall finde that
he should haue gotten 1666 franc. and
an

an halfe 3. s. 2. pence . Of the which
gaines the Marchaunt ought to haue
the halfe, that is 833 franc. 6. shillings
and halfe and 1 penye . And than take
vp those 833 franc. 6. shillings & halfe
1 peny of 100 fran. that he hath gained
and there remayneth 166 franc. 13 shil-
lings 5 pence for the Factour. Nowe
ye may annswer that the Marchaunt
shal haue of the gaines 833 franc 6 shil-
linges, and halfe 18 . And one halfe of
the principall, that is to wit of 50, that
is 25, and there be 858 franc. 6. s & halfe
1 d. And the Factour shall haue of gaine
366 franc. 13 s. 5 pence. And of the prin-
cipall 25 that is 161 franc. 13 s. 5 d. And
thus may ye do of all other semblable.
And it is proued by the reduction of the
two summes gained.

¶ The third rule of Factours with co-
uenaunts, that the Factour shall
gaine the halfe of the
principall.

An other rule of companie of Fac-
tours & Marchaunts, which couenant
that

that the Factours shall gaine the halfe
of the principall, and not of the gayne.
Example. A Marchaunt giueth vnto
his Factour 400 franc. that he shall go-
uerne them for 6 yeares, and at the end
of the time the halfe of the principall
shall be to the Factour. It happeneth
the Factour will goe his way at the end
of 2 yeares, and hath gained 200 franc.
I demaund how ought the Factour to
be paid? Aunswer. Ye ought to regard
howe much he shoulde haue gayned if
he had serued all hys time, and for to
finde it yee may worke by the rule of
three, for ye must multiplie by his con-
trary, that is to witt by 6, and deuide
by his semblant, that is by 2, in saying
if 2 haue gained 200 franc. how much
shall 9 gaine? Ye shall finde y̍ he shoulde
haue gotten 900 franc. and be gayned
but 200 franc. Wherefore he ought to
make againe 400 franc. to the Mar-
chaunt, and he ought to haue the halfe
of the principall, that is 200 francks,
therefore he oweth 200. vnto the Mar-
chaunt, and so he hath lost all his time
and 100. franc. of aduantage, for the

<div align="right">Mar-</div>

Marchaunt ought nothing to lose like as he had accomplished all his time.

The third rule of chaunges, for to vse deceit or fraude.

Two Marchauntes will chaunge their marchaundise, and the one beguiled ý other, the one hath pepper, and the other cloath. He that hath pepper wil sell for 25 francks the hundreth by chaunge, which is no more worth then 20. fran. in siluer contented. I demaund for howe much ought the other to sell vnto him the elle of his cloath, that is woorth but 15.s. to keepe him selfe from losse? Aunswer. For the rule of three ye may say thus: if 10 franks of content, giue me 25 franc. at the chaunge, howe much shall giue me 15 of content. It behooueth you to multiplie the 25 by 15, which beene 375, the which ye shall deuide by 20 and thereof commeth 18. s. 9.p. therefore ye may say that he shall sel the elle of cloath for 18 s. 9. d. And thus may ye doo of all other.

Two Marchauntes will chaunge their

their marchaundise, of whom the one
hath 100 pounde of woolle, that is no
moze woozth but 15 crownes, And he
will chaunge with an other in a peece
of cloth that is woozth 21 crownes, and
he will giue him the woolle foz 17.
crownes. I demaund foz howe much
ought the other to sell the peece of cloth
to the ende that he be not betromped?
Answer. By the rule of thzee, when 15
are woozth 17, demaund howe much
shal be woozth 21, Deuide by 15, and ye
shall finde the same that ye require.

Two Marchauntes will chaunge
their marchaundise, and the one defraud
the other that hath pepper, and will sell
it foz 24 franc the hundzeth by chaunge,
which is no moze woozth but 20 fr. in
money content, and he will haue the
halfe in money content. I demaund foz
howe much ought the other to sell the
elle of his cloth, which is no moze woozth
but 15 s? Answer. Ye must take away
the money content that the other de-
maundeth, that is 12 fraunc foz the iust
price, and of the which he will sell o-
uer. Therefoze take away and with-

drawe

Draw 12 of 20 franc. which is the iuſt
price, and there reſt 8 franc. for 8 and 4
is 12. And ye may ſay by ye rule of three
if 8 giue me 12. what ſhal giue me 15.s.
which is the iuſt price of the cloth, mul-
tiply 12 by 15 and deuide by 8, & there-
of commeth 22.s. 6.d. And therefore the
Marchant ought to ſell the elle of hys
cloath after 22.s.6.d. els he ſhould haue
loſſe. And thus ye ought to do of all ma-
ner of chaunges and barathes, for if he
that hath the pepper, demannded but
the third or the fourth, or 2 or 3, abate
al onely the ſame that he ſhal demaund,
and then by the rule as is ſaid. And note
ye well, that if yee wil multiplie ſhil-
linges, ye ſhall haue ſhillings. And of
crownes ye ſhall haue crownes, and of
frances ye ſhall haue frances. And in
like manner of all other.

¶ Other rules and queſtions to haue
the more knowledge of the ſcience
of Arithmatike, and the firſt is of
collects and talliages.

TEn men owe vnto the King of collect
and talliage 244 franc. I demaund
how

howe they shall deuide them, to the ende
that each one pay after the valour of his
goods, for it is reason that more be paid
by the rich, then by the poore. For he that
is more endowed with goods, is more
bounden vnto God and to the Prince.
Answer. It behoueth to knowe howe
much each one is woorth in his goodes
and possessions.

The first is woorth 100 francks.
The second woorth 400 franck.
The third is woorth 154 franc.
The fourth is woorth 1000 franc.
The fyft is woorth 1150 franc.
The syxt is woorth 40 franc.
The seuenth is woorth 440 franc.
The eight is woorth 80 franc.
The ninth is woorth 600 franc.
The tenth is woorth 300 franc.

Now it behoueth you to fynde the
multiplicatour and the diuisor. The
multiplicatour shall be each one by him
selfe, and so for the first it behoueth you
to multiplie by 100, for the seconde by
400, for the third by 154, and so ye must
do of all the other. And for to fynde the
diuisor, yee shall sette together all the
mul-

multiplicatours , as 100. 400. 154. ec.
and all that together shall be the deuisor
common , which is 4464 . Therefore
multiplie the collect , that is to wit 244
for each one his valour , and deuide by
4464. or by the halfe, that is 2232. and
then ye shall write how much each one
ought to pay.   ¶ Example.

The fyrst should pay 5 franc. 9 shil-
linges 3 .d. and halfe, rest 1464.

The seconde should pay 12 franc. 17.
s. 3 .d. resseth 1292.

The third shoulde pay 8 franc. 8. s. 4.
pence, resseth : 660.

The fourth should pay 54 franks 15
s. 2. d. resseth 1248.

The fift should pay 62 franks 17. s.
2 pence, resseth 96.

The syxt should pay 2 franks 3. s.
and halfe 2. d. and halfe, resseth 2032.

The seuenth should pay 24 franks
1. s. 0. pence, resseth 192.

The eight should pay 4 franc. 7. s. 5
pence, resseth 2064.

The ninth should pay 23 franc. 6. s.
10 pence and halfe, resseth 2088.

The tenth should pay 27 franc. 6. s.
                                    7 pence,

9 pence, resteth 624 ...

And they haue to deuide 9 pence and
halfe of restes.

Then when we haue all deuided,
and haue the som and the restes, we shal
set together all the restes, and deuide
them by the deuisor common, or by the
halfe. And if there be more or lesse, the
rule is not well made, for the rema-
nant of all ought to be deuided by the
diuisor common. And the profe of this
rule is reduction. And marke well this
rule, for it is right vnto the Country
where all the gods be prysed by al the
Townes and Castels, as it is in ma-
nie places of Daulphine, and of Pro-
pente.

The rule of thrée milles.

One man hath three milles, of whom
one grindeth ech day 5 septiers of corn,
and the other grindeth 7, and the third
8. There commeth a Marchaunt that
will haue grounded, one hundreth sep-
tiers of corne, I demaunde, how ought
the Miller to deuide the corne to the
Milles, to the ende that each one haue

I.   assoone

aſſone done as an other? Anſwer. For
to know this queſtion and rule, ye muſt
finde the diuiſor and the multiplicator.
The multiplicator ſhall be each one by
himſelfe, & the diuiſor ſhalbe the three
multiplicators ſet together, they be 20.
Therefore if yee will know how much
corne ought to be layde vppon the firſt
Myll, yee muſt multiply the 100 ſep-
tiers of corne by 5, and deuide by 20,
which ſhall be 25 ſeptiers, that ſhall be
layd vppon the firſt Mill. And for the
ſecond, yee ſhall multiply 100 by 7, and
deuide by 20, and there ſhall be 15 ſep-
tiers, the which yee ſhall put vpon the
ſecond mylle, and for the third yee ſhall
multiply 100 by 8, and deuide by 20,
and there ſhalbe 40 ſeptiers, which yee
ſhal put vpon the third Myll. And thus
may yee do of all other ſemblable. It
may be made otherwiſe, ſette together
the ſums that the three myllers grynde,
that is 20, and by the rule of 3, ye ſhall
ſay, if 20 giue me an 100, howe much
ſhall giue thee 5 or 7 or 8. And it is pro-
ued by Addition.

Example.

The first shall haue 23 septiers. The
second, 95 septiers. The third 40. sep-
tiers.

7. & 8.

Multiplicatours. Deuisor.

The rule and question of a Sheep-
heard or Pastour.

FOure men haue 300 Sheepe or
Muttons, of whom the first hath
100 Sheepe, the second 40, the thyrde
150. and the fourth 10. And they gyue
vnto a Sheephearde for to keepe these
Sheep 25 fran. for a yere. I demaund
howe ought each one to pay of the 25
franks after the Sheepe that hee hath.
And howe long time ought each one to
haue him at commons or meate? An-
swere. For to know this rule and all o-
ther semblable, it behoueth you to finde
the multiplicator and the diuisor. The
multiplicator of the first, shalbe 100, of
the second 40: of the third 150, and of
the fourth 10: then set together al these
sums, the which be 300. the diuisor co-

J 2   mon.

mon. Or ye may make it by the rule of
3. In saying; if 300 giue me 25, howe
much shal giue me 100 or 40 or 150, or
10, and alwaies diuide by 300, & thus
of al other rules.   Example of the first.

100	9 franks,	6 s.	8 d.
40	3 franks,	6 s.	8 d.
150	11 franks,	10 s.	
10	0 franks,	10 s. 6 d. 300

Multiplicatours.   Diuisor.

Now for to know how long each one
ought to nourish him, yee must make
the yeere in monethes, and then multi-
ply y̾ same, as is sayd aboue, and deuide
by 300. Or to make it more sure and
certaine, yee shal set the yeere in dates,
that is, 365, and then multiplie each
one by his multiplicatour, and deuide
by the diuisor common, that is to wit,
by 300, and yee shal finde that the first
ought to nourish the Sheephearde 121
dayes and a halfe, and a sixt part. The
second 48 dayes and a halfe, and a sixt
part. The thirde, 182 dayes & a halfe.
And the fourth 12 dayes, and the sixte
part of a day. And thus may yee doo of
all other rules.

The

The rule and question of a Vessel with
three fountaines or
holes.

A Vessel holdeth 60 septiers of wine,
in the which there be three foun-
taines or holes : of whom at the least
runne, it should emptie one septier in
an houre, the next two septiers in an
howre, the third fiue in an houre.
It happeneth that it runneth at all
the three fountaines at once: I demand
in how many houres the vessell shall be
voyde, and how much each one shall
voyd by it selfe? Answer. For to know
how much each one shall voyde, it beho-
ueth you to finde the multiplicatours,
therefore diuide 30 by 1, and it is 30,
which is the multiplicator of the first.
For the seconde diuide by 2, and there-
of cometh 15. And for the thirde de-
uide by 5 and that is 6, and than sette
together all the summes, that is to wit,
30, 15, and 6, and they be 51. There-
fore multiply each one by himselfe, and
diuide by 5

30	3 5 septiers, 1 quart and an halfe
15	17 septiers, 1 quart and an halfe
	rest 4 and halfe.
6	7 septiers o quart, rest 12, 51

Multiplicatours.   Divisor.

And for to knowe in howe manye houres this vessell shall voyde, yee shall set together the three numbers, that is to wit: 1. 2. 5 which be 8, and that 8 is the divisor, therfore devide 60 by 8 and ye shall finde that in 7 houres and an halfe it shall be empty. And thus may ye doo of all other semblable.

¶ The rule and question of Zara-sins, for to cast them into the sea.

THere is a Gally vpon the sea, wher in bee thirtye Marchauntes, that is to wyt, 15 Christian men, 15. Tarasins ther falleth great tempest, wher vpon it behooveth them to caste all the marchaundise into the sea, and yet for all that they be not in surety from perishing, for the Gallie is feeble or weake

so

so that by a decree made by the Patron,
it is neceſſarye that there be caſt into
the ſea ẏ halfe of the xxx. Marchants
but the Zarazins wil not be caſt in, nor
alſo the Chriſtians. Then by an ap-
pointment made, they ſhall ſette them
downe vpon a row, & then count them
vnto 9, and he that ſhould fall vpon the
9 to caſt into the ſea, howe ſhoulde yee
ſette them that none of the Chriſtyans
ſhoulde be caſte into the ſea? Aunſwer.
Yee ſhall ordaine them after theſe me-
ters following.

Fyrſt 4. and then 6. and 2. before one
Then 3. and then 1. ſtanding alone.
One and then 2. then 3. and then three.
Then 1. and then 2. and 2. with 2. beſ

The Chriſtians name firſt, the Za-
raſing after.

In all theſe numbers, which ſtande
ſo in order.

That is to witte. 4. Chriſtians. 5. Za-
raſins. 2. Chriſtians. 1. Zaraſin. 3. Chri-
ſtians. 1. Zaraſin. 2. Chriſtian 3. Za-
raſins. 1. Chriſtians 2. Zaraſins. 2.
Chriſtian 2. Zaraſins. 2. Chriſtians
Zaraſen.

A ...
the which hath left ...
... and hath ... in his
testament, ... his ...
... plue ... part ... people
... be ... bequeathed ...
... with the other part ... brought
forth a daughter, then the mother ...
... part, & the daughter the other
part. It happeneth when the man is
dead ... forme and
a daughter ... they shall
... 2 ... the daughter, and 2 ...
... the mother ought to have 2
parts against the daughter, and let 4

for the sonne, for he ought to haue two partes against the Mother. Wherefore ye shall multiplie the 1200 crownes by 4 for the Sonne, by 2 for the Mother, and by 1 for the Daughter. And for to finde the diuision, yee shall sette together 2. 2. and 4, which beene 7, therefore deuide by 7.

¶ Example.

The Sonne shall haue 685. crownes and an halfe 7. s. 8. d. and halfe, resteth a halfe d.

The Mother shall haue 342. crownes, & an halfe. 12. s. and halfe 4 d. resteth 2. pence.

The Daughter shall haue 171. crownes & c.

They haue to deuide an halfe peng.

Answer. For to knowe this rule, yee haue first to the placing of them.

A man hath a grounde that is in length 200 yardes in bredth 70 yardes whereon he will builde and builde houses of length s. yardes and

4 of

4 of breadth, I demaunde howe many
houses shall he haue vpon that ground.
Answer. Yee shall multiplie the length
by the breadth, in saying 70 times 100,
bene 7000, and each house must haue
5 yardes of length, and 4 of breadth,
multiply the one by the other, and they
make 20, which 20 shall be the diuisor
common, therefore deuide 7000 by 20.
and ye shall finde that there shall be 350
houses. Note well this rule.

¶ A rule and question of the
walles.

A Man will make a wall 32 foote in
length, and 2 of thicknes, and the
height 25 foote, each foote shall cost
the making 2 s. I demaunde howe much
shall cost the making of all the wall.
Answer. For to knowe this rule, yee
shall multiplie the length by the thick-
nes, in saying 32 times 2 been 64, and
then yee shall multiplie it by height in
saying 25 times 64 is 1600, and than
multiply by the price, that is to saye by
2 shillinges, the which been 3200 shil-

linges,

kinges, whereof yee shall make franks,
therefore deuide them by 29. and they
be 169 franks. And so much shall coste
the making of the wall.

¶ The rule and question of the tyling
of a house.

If you will haue a house couered
with tyles, ye must know how ma-
ny tyles behoueth you to haue vnto the
length of a line, and howe many to the
breoth. Example. If the house had néede
of 34 for the length, & 54 for the breoth,
I demaunde how many should bee re-
quisite vnto all the house? Aunswer.
Multiplie the length by the breadth in
saying 34 tymes 54 beene 1836 tyles,
and so many must ye haue to couer the
house.

¶ The rule and question of a
garden.

A Louer byd enter into a Garden for
to geather apples for his Lady, and
vnto the saide garden be three gates,
and

and in each gate is a porter, and whan
he shall issue, after that he hath gathe-
red the apples, he must giue the halfe
of his apples and one to the first porter,
and when he is at the seconde porter,
he must gyue vnto him the halfe and
one, and to the thyrd porter the halfe
and one, and whan he is foorth he hath
no more but one apple to giue vnto his
lady paramour. I demaunde howe ma-
ny apples had he gathered? Answer. He
had one apple when he was foorth, set
to it one, and then it is 2, then double
the 2 and it is 4, therefore hee had 4 at
the thyrd porter. Wherto this 4 set 1
and that is 5, and then double them and
it is 10, therefore he had 10 apples at
the second porter, to this 4 set 1 and it
is 11, double them and they be 22 ap-
ples. Therefore ye may say that he had
gathered 22 apples.

¶ The rule and question of a ladder or
stayre.

I Haue seene a stayre that hath foo
steppes, in the fyrste steppe was a
doutte,

douffe, in the seconde steppe 2, in the
third 3, in the fourth 4, and so vnto 100.
I was demaunded howe many douffes
were in all the stayres. I aunswered
5050. Probation, I will giue you cer-
taine of all numbers that doo proccede
naturally, that is to wyt, 1. 2. 3. 4. 5. 6.
7. 8. 9. 10. And infinitely as ye will, for
all number naturall is ended in num-
ber euen, or in number not euen, if it be
ended in number euen, than by the halfe
thereof multiplie the number not euen,
that encloseth it. ¶ Example. 1. 2. 3. 4.
will ye know what all amounteth vnto
in saying: 2 times 5 is 10, for 2 is the
halfe of 4, and 5 is the number not euen
that encloseth 4. And if the number end
in the number not euen, as by example.
1. 2. 3. 4. 5. Will yee knowe what all a-
mounteth vnto. Multiplie 5 by hys
greater halfe, that is 3, saying: 3 times
5 is 15. And thus shall ye alwaies doo
in what number soeuer it be, euen or
not euen.

The

¶ The rule and question of two men.

IF two men goe by one way, and that they goe into any farre place, and proceede in such wyse, that that one proceedeth each day certaine number of miles, that is to say 4 and 6 moze oz lesse. And that other man goeth encreasing the first day one myle, the second day 2, the third day 3, and so encreasing after progression. Be ye all certaine that in some day the one ouer taketh the other. It is demaunded in what day, and how many myles they shall goe? Answer. Duble the number of his myles that goeth each day an egall number of myles. And of the number double take away one vnite, and the remanant shal shew you what day they shall meete eyther other.

¶ Example. We shall set it that the one goeth a day 6 miles, duble that and it is 12, and frō that 12 withdzawe one vnity, as it is sayd in the rule, and there remaineth 11, that is the number of the
day

day that they shall meete together. And
for to knowe the number of the myles
that they haue gone. Multiplie 11 by 6,
in saying: 6 times 11 is 66 myles that
they haue gone. Thus may yee knowe
it by the rule of progression continued,
11 is a number not euen, be it therefore
multiplied by the greater halfe, that is
to wit by 6, in saying: 11 times 6 or 6
times 11 is 66. And also one onely num-
ber amount by Progression, and by
multiplication, wherby it appeareth
that vpon the eleuenth day they mæte
each other, and haue gone 66 miles.

¶ The rule and question of the women
that bare Apples to the
Market.

Three women bare apples well and
honestly trimmed to the Market,
of whom the one bare 50, the other 30,
and the third 10, their husbandes were
brethren and gaue commaundement to
them, that they shoulde make as good
market one as an other, that they sell
all after one price, and that the one
being

bring as much money boyng as the other. I demaunde howe that may bee doone? Aunswer. It is possible. For firste there commeth a Marchaunt to her, that hath 50 apples, and sayth to her how many for one peny, and she answered 7, and so she maketh 7. d. of her 50 apples, and hath remayning one apple. The other sold after the same price, And shee that had 30 apples solde hers for 4. d. and she had remayning 3 apples. The other that had 10 apples sold hers for 4. d. and shee had remayning 2 apples. And then came there another Marchaunt that gaue 3. d. for an apple. And so each one bare home 10. d. as ye see in this example. And thus may ye doe of all other semblable.

¶ A rule and question of the bagge.

A Marchaunt hath a bagge that wayeth 19 ounces of three mettalies, whereof 7 ounces is of gold, 8 of siluer, and 4 of copper. And he will take there out 5 ounces, I demaund how much of gold,

gold, how much of ſyluer, and howe much of copper is in theſe 5 ounces? Anſwer. Ye ſhall multiplie the 5 for to knowe the golde by 7, for the ſiluer by 8, and for the copper by 4. And for to finde the diuiſor, yee ſhall ſet all the multiplicators together, that is 19 therefore deuide by 19, The aunſwer is in this example.

7   Of gold 1 ounce and an halfe. 8. d 5 graynes, reſteth 1 peny.

Of ſiluer 2 ounces, 2 d. and halfe, 1 halfe grayne, reſteth 2 pence.

4   Of copper 1 ounce, 1 peny 6 graynes, reſteth 6.

Now ſet the remnant together and deuide it by the diuiſor common, that is 19. And it is 1 halfe graine.

¶ The rule and queſtion of the bell.

IN a church is made a bell, and therin is put 30 pounde of golde. 50. l. of ſiluer, 100 of tynne, and 102 of copper. Whan the bell is made there remay-

K.   neth

maineth 40 pounde in one peece, that
they will sell, I demaund how much is
there of gold, how much of siluer, how
much of tyn, and how much of copper?
Answer. Yee shall do as is aboue sayd
of the bag, for ye shal multiply 40 each
one by himselfe, and deuide by 282.

Example.

30   Of golde 4 pounde 4 ounces 4 d.
       1 grayne, resteth 6.

50   Of siluer 7 pound 1 ounce 11 pence
       9 graynes & an half, resteth 57

100 Of tynne 14 pound 2 ounces, and
       halfe 10 d. and halfe 7 graines
       resteth 114 pence.

102   Of copper 14 pound 7 ounces,
       11 pence & an halfe, 5 graines
       and halfe, resteth 105.

Multiplicatours, 282. Diuisor common.

And all deuided, they haue of restes
one graine.

This rule is prooued by Reduction,
set to the same that remaineth, and de-
uide by the deuisor common, and there-
of commeth one graine.

                          The

The rule and question to change golde into siluer.

A Merchant hath 100 franks in gold, and hee goeth vnto a Changer and sayth: I haue 100 franks in peeces of Golde, I would haue the money there of in small peeces, that is to wit of 2 d. of 3 d. of 4 d. of 5 pence, and of 6. pence, of 8. pence, and of 10. pence: and I woulde haue as many peeces of one as of another. I demaund how many peeces of euery money ought the changer to giue him? Answer. Yee must set together all these numbers, 2. 3. 4. 5. 6. 8. and 10, that is 32: the deuisor cōmon, and then yee must make of the franks pence, that is 24000. d. which yee that deuide by 32, and there be 750 peeces of each money: and thus yee may doo of all other semblable.

The rule and question of cloth of diuers colours.

I Haue a peece of cloth, where of the third part is white, the fourth parte

R 2   black,

blacks, and eyght ells of gray. I de-
maunde howe much hath it of length?
Answer. Set 12, for in 12 yee shal find
one third and one fourth, the third and
the fourth of 12 is 7, and there remay-
neth 5, therfore forme the rule of three,
if 5 bee made of 12, of howe much shall
come 58, multiply 12 by 8, that is 96,
and deuide by 5, and thereof commeth
19 elles and 1 fyste, therefore yee may
answer, that the peece of cloth hath of
length 19 elles and one fift.

The rule and question of Spiceries.

A Bourgesse sayde vnto his seruant:
hold these 13 franks, and goe and
buy the Pepper that costeth 15. s. the
pounde, and Sugar that costeth 18. s.
the pound, and of fine Spices that co-
steth 9 s. the pound, and Ginger that
costeth 13 s. the pounde, and Cloues
that costeth 10. s. the pounde, and bring
mee as many pounds of one as of ano-
ther. I demaunde how many pounds
ought the Apothicarie to giue him for
13 franks?

13 franks? Aunswere. Yee shall set all the prices together, 15.18.9.10.and 13. which be in number 65, which shall be the deuisor, and then ye shall make the franks in shillings, that is, 260 shillings. Then deuide by 65, and thereof commeth 4 pounde, therefore yee may aunswer, that hee ought to giue him 4 pounds of all those Spices which wee haue already named.

The rule and Question of Egges.

A Young Mayden beareth Egges to the market for to sell, and shee meeteth a young man that woulde play with her, in somuch that he ouerthroweth and breaketh the egges euery one, and wil not pay for them. The Mayde causeth him to be called before ye Iudge The Iudge condemneth him to pay for the egges, but the Iudge knoweth not how many egges there were. And that hee demaundeth of the Mayd, shee answereth that shee is but young, and can not well count, but shee and her Mo-

ther had ordained and disposed them by
two and two, and there remained one
egge. Then by three & three, and there
remained one, then by foure and foure
and there remained 1, then by 5 and 5.
and there remained 1, then by 6, and 6
and there remained 1, and at the last by
7 and 7, & there remained none. I de-
maund howe many egges there were?
Aunswere, 721. And for to proone it,
multiply the numbers one by another,
in saying: 2 times 3 is 6, 4 times 6 is
24, fiue times 24 is 120, 6 times 120
is 720, and set thereto 1 that remained
alwaies, and then they be 721. & which
yee shall deuide by 7, and there remai-
ned nothing, and so she had 721 egges.
and after this example may the Iudge
iudge the young man to pay.

The rule and question of money for-
gotten with a Changer.

AN aduocate hath giuen to a Chan-
ger mony, and hath forgotten howe
much. For to know how much, and for
to haue al his mony, he findeth subtilly
that

that enfueth, he fayth to one of his fons
(of whom he hath many) goe vnto such
a Chaunger and bzing me a frank, and
the tenth part of the mony that I deli-
nered him, and so it was doone. And at
another time hee fayde vnto another
fonne, goe vnto the Chaunger, & bzing
mee 2 francks & the tenth part of the re-
mainent, & so he fayd vnto all, but vn-
to the laft he fayd : go vnto the Chaun-
ger, and bzing me all the remainant of
the money, and so was it doone, and as
much bzought tho one as the other : I
demaunde howe much money he had,
how many fonnes, & how much money
eche one of them bzought ? Anfwer. For
thefe thzee queftions pofe the number,
that they all bzought, that is, to wit, the
tenth be 10, and of 10, take one, & there
doe remaine 9, therfoze ye may fay that
he had 9 fonnes, and eche one bzought 9
fr. And foz to know how much he had
giuen to the Chaunger, ye muft multi-
ply 9 by himfelfe, & it is 81. Therefoze
he had deliuered 81. franc. to y Chaun-
ger. Foz to make the pzofe fay 81, and
take vp foz the firft fonne 1, & the tenth

part

part of the remainant, and in like ma-
ner yee must do of all other.

The rule and question of
time &c.

A Man saith : if I had as much more
of time as I haue, and the halfe,
the thyrd and the fourth of my time
that I haue sette to, I should haue of
yeeres 50. I demaund what age bee
hath? Answer, Lay 12, for in 12 ye find
an halfe, a thyrd and a fourth. And then
set thereto once as much, and that is
24, then set thereto one halfe, 1 thyrde
and 1 fourth of 12, and they be 37, and
then forme thy question. If 37 be com-
men of 12, of how much shall come 50?
Multiply 12 by 50, and deuide by 37, &
ye shall finde that he hath 16 yeeres 78
dayes and a halfe 10 houres resteth 2.

¶ The rule and question for to
deuide destributions.

I N a Church there be 12 Chanons, 6
Priestes, & 6 Clarkes, they haue to
deuide

deuide a dystribution of 400 francks, wherof the Chanons haue 3, ý Priestes 2, and the Clarkes 1. I demaund how much shall the Chanons haue, howe much the Priestes, and how much the Clarkes? Answer. Multiply one number by an other in saying: 3 times 12 is 36, that is the multiplicator for ý Chanons 2 times 6 is 12, the multiplicator for the Priestes, 1 tyme 6 is 6, the multiplicator for the Clarkes. How much eche one ought to haue, yé may see in the example by the diuisor. Set togeather all the multiplicatours, and they be 54, the deuisor common.

36	240	francks.
12	120	francks.
6	40	francks.
Multiplicator.	Diuisor.	60

¶ The rule and question of the Spere.

A Spere is the halfe & the thyrde part within the water, & 9. foote without. I demaund howe much of length hath the spere? Answere. Set 6, for in

6 is

6 is found a halfe and a third, the halfe
and the third of 6 is 5, and there remai-
neth 1 forme ye rule of three. If 1 be co-
men of 6, how many shall come of 9
multiply 6 by 9, & they be 54, deuide thē
by 1 and they be 34, therfore ye may an-
swer that that speire hath 54 foote of
length, the halfe is 27, & the third 18 and
there be 45 foote within the water, and
9 without, that is 54. And so may yee
doo of all other semblable, as of a toure.

¶ The rule and question or two men
that went the one against
the other.

Two men begin to go and take their
iourney the one agaynst the other
vpon one day and in one houre. For
that one that goeth from Parys to Ly-
ons, goeth euery day 7 myles, that o-
ther goeth fro Lyon to Paris, and go-
eth each day 9 miles, and from Lyon
vnto Paris been 80 miles. I demaund
how long time shall it be or they meet?
Answer. Set together the miles that
they

they goe in one day, that is to wit 7 and 9 which is 16. Forme now the rule: if 10 come of 1 day, of how much shall come 80 that they haue to goe, multiply 80 by 1, and it is 80, the which ye may deuide by 16, and therof commeth 5, therfore in 5 dayes they mæte. The proofe is, for he that goeth from Paris to Lyons goeth in 5 daies 35 miles, and the other 45, which be in all myles.

The rule and question of a Cat.

There is a Catte at the foote of a trée the length of 300 fœte, this Catte goeth vpward each day 17 fœte, and discendeth at night 12 foote, I demaunde in how long time shall she be at the top? Answer. Take vp and bate the night of the day, that is 12, of 17, ther remaineth 5 therfore ȳ Catte mounteth each day 5 fœte, deuide now 300 by 5, ȇ therof commeth 60 dayes, then shee shall be at the toppe. And thus ye may doo of all other semblable. For of this rule, ye may make 4 questions, as it appeareth in the practise thereof.

The

¶ The rule and question of twentie Schollers.

IF 20 Schollers owe vnto their Hoſt 5. d. tourneyes, howe ought they to pay ſo that each one pay his dutie, and giue the money of his purs. How much ſhall each one pay? Anſwer. Each one ſhall pay 1 peny Paris, and the Hoſte ſhall returne vnto him againe 1 penie tourneis, and ſo each one ſhall pay the 4 part of a turneis.

¶ The rule and queſtion of Pylgrimes.

TWentie Pilgrimes, that is to witte men, women, and little chyldren, haue ſpent in drinke 20 pence, whereof the men pay 3 .d. the women 2.d and the little children halfe pence. J demaunde how many men, & how many women, and how many children be there ſo to pay this 20. d. ſo that there be 20 perſons? Anſwer. There ſhall be one man, 5 women, and 14 children

The

¶ The rule and question of a
Chauntour.

A Chauntour had each day of rent frō
the Courte of the Prynce 12. s. the
which is payed by knights, Damosels
and Squires, of whom the Knightes
pay 2. s. the Damosels 6 pence, and the
Squires 3 d. J demannde how many
knightes, howe many Damosels, and
how many Esquires ought there to be
so pay this 12 s. so that there be 12 per-
sons: Answer, There must be fyue
Knights, 1 Damosell, and 5 Esquires.

¶ The rule and question for to
deuine.

If yee will cause your fellowe to be-
leeue that ye shall deuine how many
peeces of siluer hee hath in hys righte
hand, say vnto him that he put as ma-
ny peeces in that one hand as in that o-
ther, & then that he take 5 from the left
hand to the right hande, and that he put
foozth of the right hande into the least
hand

hand as many peeces as he hath remaining in the leaft hand . And there shall remaine 10 in the right hand.

¶ The rule and queſtion of three Sayntes.

AN Hermit is entred within a Church wherin there be 3 Saints, that is to wit, S. Peter. S. Paule, and S. Fraunces . This Hermit commeth firſt to S. Peter and ſaith to him in a maner of his oration : I pray thée that it pleaſe thée to double the ſiluer péeces that I haue in my purs,and I ſhall giue thée 6,and ſo it was doone. Then came he to S. Paule & ſaid to him, if it pleaſe thée to double the péeces that I haue in my purs, and I ſhall giue thée 6, and ſo was it doone . Then came he to Saint Fraunces and ſaid : if it woulde pleaſe thée to double me the peces that I haue in my purs , I ſhall giue thee 6, and ſo was it done, and nothing had he remaining . I demaund how many peeces of ſiluer had he in his purs ? Anſwer : He had 3 & 1 forth, and for to know it doble them,

them, ϵ they be 10 and an halfe, and then
yee muſt giue 6 to S. Peter, and there
remaineth 4 and an halfe, double them
and they be 9, and then giueth he 6 to
S. Paule, and then there remayneth 3
double them, and they be 6. and that 6
giueth he to S. Fraunces, ϵ ſo he hath
nothing remayning.

❡ Heere foloweth diuers other propper
rules and queſtions.

A Lord hired a ſeruaunt the which he
ſhould giue euery yeare 10 nobles
and a gowne, ϵ the ſame ſeruant dwel-
leth 7 moneths with hym, and then
they vary, in ſo much that his Lorde
gaue him licence to goe his way. And
ſayd: go thy wayes out of my houſe and
take thy gowne with thee, and then I
am nothing in thy dette. Nowe I de-
maund what was the gowne woorth,
will ye know ẏ: then marke how many
moneths 7 is leſſe then a yeare, ẏ is 5
monethes leſſe. And had the ſeruant ta-
ried ſo long yet by his maiſter, thē ſhuld
be haue had the gowne and 10 nobles.

Ther

Therfoze fay thus : 5 moneths giueth
20 nobles, what giueth 7? make it after
the rule of thzee, and it commeth to 14
nobles.

¶ Of three felowes or young men.

Three felowes play together the one
to win the others money. For the one
had moze money then the other. And the
first casteth that the one of them 3 lee-
seth iust so much money as the other 2
had. Then casteth the second and léeseth
also as much as the other 2 had. Then
casteth the thyzd and leeseth also iust as
much as the other 2 had. And then was
the money iust deuided, & had each like
much. Nowe I demaund howe much
had each oz they began to play, and how
much money that each had whan they
plaied. Will ye know that, then marke
how many persons did play, and adde 1
to them, as heere adde 1 to 3 maketh 4.
so many nobles had the first. Now dou-
ble 4 commeth 8, & subtract 1 from 8 rest
7. so many nobles had the second. Then
double 7 commeth 14, therof subtract 1.
rest 12, so many nobles had the third.

An

An other question.

A man buyeth 46. li.of saffron for 30, pound, what shall coste 63. li.of saffron. Will ye know that, then multiply 30 poundes with the 63 li of saffron, commeth to 2890. Now deuide them with

46 commeth 41 li.and $\frac{44}{46}$ part of a pound to pay for the 63.li.of saffron. Now will ye know how many shillinges that $\frac{4}{46}$ part of a li. is, then multiply 4 by ($\frac{4}{46}$ 20 for 20 s.maketh a li.commeth 1. s.€ $\frac{34}{46}$ part of a.s. Now will ye know how many pence that 34 part of a shilling is, then multiply 34 with 12 pence, maketh a.s.commeth 408. Deuide them with 46 commeth to 8 pence , and 40 part of a peny. Now will ye know $\frac{40}{46}$) how many farthings that 40 parte of a peny is, then multiplye 40 with 4, for 4 farthings make a peny, commeth 160 farthings. Now deuide them with 49 commeth 3 farthings and 22 part of a farthing. $\frac{22}{46}$ This don ye shal finde that 36.li.of saf-

L. fron

fron cost 42 li. 3. s. 8. farthings and 22 ————

part of a farthing. 42

Item a 165 poundes of allome cost 2 poundes 5 shillinges 6 pence, 9 farthinges: what shall cost 22 poundes of allome. If ye will soyle this question, then make of your poundes shyllinges and adde thereto the odde 5 shillinges, commeth to 45. s. When make of the 45. s pence, and ad 6 pence, commeth to 546 d. then make of your pence farthinges and adde thereto the 9 odde farthings, commeth to 2199 farthing. Now multiply the farthinges with 22, commeth to 48246 farthinges. Nowe deuide them with 165. commeth to 292 $\frac{66}{165}$ parte of a farthing, for so manye farthinges shall cost 22 li. of allome. Nowe will ye knowe howe many pence that the forewritten farthinges make, then deuyde them with 4, for 4 farthinges make a peny.

Then will ye knowe how many shillinges that they make, then deuide the pence with 12, for 12 pence maketh a shilling. Thus done ye shall finde that

22.

22 lb of alsome coste 6. s. 3. d. 1. farthing
and it is doone.

¶ An other question.

A Marchaunt hath bought a bag of
pepper, I say not how heauy, but when
he giueth for a pounde of pepper 12. d.
then remaineth him yet 37 pence. And
when that he giueth for a pound of pep-
per. 15. d. then he lacketh 44. d. to paye
for the pepper. Now I demaund how
heauy the bag of pepper was, and how
much mony y the Marchaunt had. For
to know this & such other like questi-
ons, ye shall take & subtract 12 from 15
& there resteth 3, which 3 shall be your
deuisor. Then shall ye adde 44 and 37
together, & that maketh 81. Then must
ye deuide 81. with 3, & therof cometh 27
so many pounde weight the bag of pep-
per. Now will ye know how much mo-
ney the Marchaunt had, then must yee
multiply 12 with 27, & ad 37 thereto or
multiply 15 with 27, and subttract 44
commeth 361, so manye pence had the
Merchant.

An other question.

A drunkard drinketh a barel of beere

in the space of 14 dayes, and when hys
wife drinketh with him, then they drink
it out within 10 dayes. Nowe J de-
maunde in what space that his wyfe
should drinke that barel of beere alone.
For to soyle this question & such other
lyke, ye shal first subtract the least drin-
ker from the more, that is 10 from 14,
and there remaineth 4, and that is your
diuisor. Nowe say: 4 giueth 10, what
giueth 14. make it after the golden
rule, and ye shall finde that she
should drinke it in 35
dayes.

¶ Heere endeth the Introducti-
on of Algorisme for
the pen.

Heere

Here beginneth the Introduction for to learne to reckon with the Counters, with diuers rules belonging, to the same.

C. thousand. ●——●——●●——●——●●
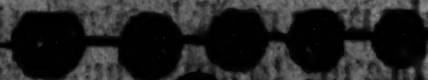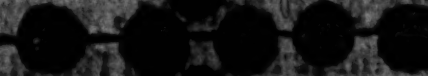
X. thousand. ●——●——●●●——●——●

Thousand. ●——●●——●——●——●●
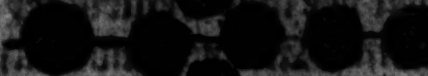
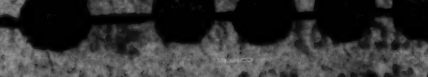**Hundreth.** ●——●——●●——●——●●
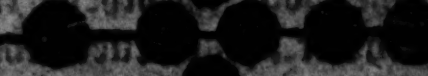
Ten. ●——●——●●——●——●●
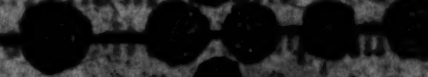
One. ●——●——●●●——●——●

FOr as much as there be many persons that be vnlearned, and cannot write, yet neuertheleste the craft or science of Algrim and reckening is needefull for them to know, wherefore I shall hereafter declare and write of this science in the best and shortest wise that may be possible, how that yee shall order your selfe in reckening and to cast counters.

First

First ye shall vnderstand that in the craft of Agrim be 9 letters or figures that men may lay and write al manner of sommes withall. Therefore first of al a man must know in this craft or science for to lay 9 counters in the places of those 9 figures, for they must lye euermore still for a rememberaunce, so that yee may remember your place by them. And yee must lay them the one right aboue the other, that is to saye, in the first place euery counter standeth for one, and the neathermost counter is the first place. In the second place euery counter standeth for 10. In the thyrde place for a 100. In the fourth place for a thousande. In the fifte place for 10 thousande. In the syxt place for a 100 thousande. In the seauenth place for a myllion. In the eyght place for 10 myllions. In the ninth place for a hundreth millions. In the tenth place for a thousand myllions, and so foorth infinite. And note well that euery counter that is layd betweene the lines, betokneth euermore 5 times more then the counter that lyeth in the place nexte vnder him,

him, that is to say, the firste counter ly-
ing alone aboue the fyrst place betoke-
neth 5. the counter lying alone betwene
the seconde and the third lyer and place,
standeth for 50. aboue the third place 5
hundreth, aboue the fourth 5 thousand,
aboue the fift place 50 thousand, aboue
the sixt place 500 thousand, aboue the
seuenth 5 millions, aboue the eyght 50
myllions, aboue the 9 place 500 milly-
ons, aboue the tenth place 5000 mylli-
ons. But if ye wil the more surer know
your places, it is necessarie for you to
marke euery place with a marke, as to
lay a counter or some other thing which
shall lye still, & in no wyse be remoued,
but ye must take heede if ye lack coun-
ters for the marke of your places, that
ye lay them not nie the counter that ye
must worke with all. least that yee take
the one for the other, but laye them as
ye see them marked in the examples fo-
lowing. And whan ye haue layd mar-
kes, and know the order of your places,
ye may ad, subtract, multiply and de-
uide what numbers yee lyst, that is to
say, to cast or to abate at your pleasure.

and   Item

¶ Item, whan there lye 2 counters be-
twene two liers, take them vp and lay
1 besyde the next lier aboue them. And
when there lye 5 counters besyde any
lyer, take them vp and lay 1 in the next
space aboue them.

¶ Of addition.

ADdition is none other thing, but to
sette togeather 2 or 3 numbers and
to make of them a totall somme, as in
the example folowing.

There is a man which oweth 2 9. di-
28 pound, 100 pounde, 50 pound and 69
pounde. Nowe if ye will knowe howe
much that all these sommes maketh to-
gether: Then for the first summe ye must
lay 2 counters beside the seconde lyer,
for they 2 stande for 20, that is for the
first summe. Nowe for the seconde sum
lay 1 counter beside the seconde lyer, for
that is 10, and lay 1 counter betwene
the neathermost and the seconde lyer, for
that it standeth for 50, and then lay 3
counters beside the neathermost lyer
and they altogether make 8. Now for
the third, summe, that lay 2 counter be-
side

ſide the thirde lyer , foʒ that is an 100.
Foʒ the fourth ſumme lap 1 counter be-
ſide the third and the ſecond lyer , that
is 50. Now foʒ the fift ſumme laye one
counter betwixt the thirde and the ſe-
cond, and 1 beſide the ſecond lyer , and
1 betweene the ſecond and the neather-
moſt, and 4 beſyde the neathermoſt lyer
and that maketh together 69; and in ſo
doing yee ſhall fynde that all the foʒe-
wʒytten ſummes make togeather 2474:
as ye ſhall ſee in the fygure following.
And euermoʒe foʒ a generall rule re-
member your places , foʒ euery coun-
ter that lyeth beſide the firſt lyer , ſtan-
deth but foʒ 1, in
the ſeconde place
euerie counter
ſtandeth foʒ 10, in
the third place foʒ
100, as is before
rehearſed.
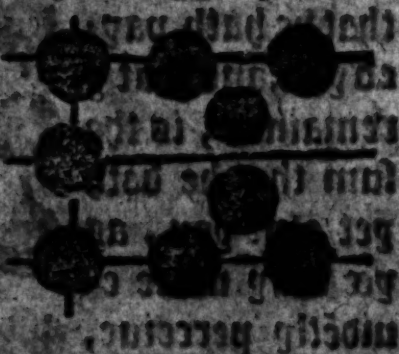
Will ye proue whether ye haue ad-
ded well oʒ not, then ſubſtract all your
ſummes one after another. Now in like
wiſe as ye dad with this example, ſo ye
ſhall doe with all other of addition.

¶ Of Substraction.

Substraction is if yee will withdrawe any summe from an other somme, yee must knowe 2 nombers that is to wyt, the nomber that yee will withdrawe, and the number wherefore yee will withdraw. An example. There is a man that oweth you 9756 poundes, and thereof he hath payed you 1989 poundes. Now if ye will knowe what there resteth, then set downe your sum that hee ought you, and thereof withdraw ye sum that he hath payed you, and that ye remaines, is the sum that he doth yet owe you, as yee may more euidently perceiue, in the example hereafter following. And when yee haue set your debt, that is to say, 9756 poundes vnder this manner, as is before theloued, then if you will knowe the rest, take there-

thereof that yee haue payed as 5989
poundes. Now for to do this, yee shall
first take vp the counter that lieth be-
tweene the fourth and fift lier, for that
is 5000. Then take vp one of the coun-
ters that lieth beside ƴ fourth lier, and
that is 1000, and yee should take away
but 600, therefore yee must lay downe
1 counter againe beside the thirde lier,
that is 100. Then take vp one of the
counters that lieth beside the third ly-
er, which is 100, from which ye should
take but 80, therefore ye must lay two
counters beside the second lier, that is,
20, and 80 that yee haue taken vp, ma-
keth 100, then take vp one of the coun-
ters that lieth beside ƴ second lier, that
do 10, and yee should haue taken away
but 9, therefore ye must lay one coun-
ter beside the nethermost lyne, that is
1, and the 9 that yee haue subtracted or
taken vp, maketh 10, and there remai-
neth 3767 pound debt, and they stand
as in the example following is plainly
layde downe.

Will you proue whe-
ther you haue substrac-
ted well or not, then ad
thereto that yee haue
paied and if the summe
come then so great as it
was afore, then is your
substraction true, else
not.

¶ Of Multiplication.

Multiplication is nothing else but
to multiply one number by ano-
ther, as thus, to knowe what two
tymes 9, or 6 tymes tenn, and soch
like. And in multiplication, yee must
consider two numbers, that is to witte
the number that ye will multiply, and
the number whereby ye will multiply,
and ye must worke in multiplication
after this manner. Fyrst thee shall laye
downe the lesser number, which is 6,
and this 6 is the number that shall bee
multiplied, & the other number that
ye shall multiplye withall. And ye shall
lay the number that shall be multiplied
at the right syde of your lyars, & when
yee

ye woozke your multiplication, ye ſhal
lay them at the left ſide, as in this ex-
ample following appeareth.

First yee muſt lay downe the leſſer
number which is 4 as ye ſee them layd
here on the right hande: then muſt yee
take vp one counter, and lay 9, foz it is
on the other ſide of the marks, that is to
wit, at the left ſide, and after that take
vp another counter, and lay alſo 9 foz it,
and ſo foozth foz euery counter that yee
take vp ye muſt lay 9 foz that the other
ſide. And when yee haue ſo wrought, ye
ſhall finde that it will come iuſt to 3 6,
as yee ſee the counters befoze layde on
the left hand of the lines.

And if yee will multiplie by greater
numbers, as thus, to knowe what is
24. times 14. First lay 14 on the right
hand of your lyers, oz marks, as this
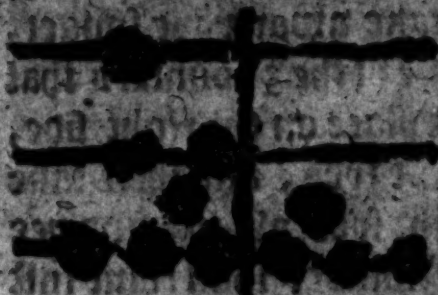example next following, moze plainlie
ſheweth.

And

And there ſette your finger againſt
the ſecond lyer and that finger ſo ſette,
dooth dampe all the places vnderneath
as though that were the firſt place, and
then take vp the counter that lyeth in
the place where your finger is. ¶ nowe
reckon the ſecond place to be your firſt
place, and then lay 24 on the leaſt hand
of your marke, as the example ſheweth.
After that done take away your finger,
and then take vp 1 of the 4 counters,
and foz him lay 24 on the leaſt ſide, as
ye did befoze, and ſo foz euery counter
that ye ſo take vp lay 24, ¶ it ſhall come
to 336 as the example befoze ſheweth,
and then ye haue the effect of your queſ-
tion, that in 24 times 14 make iuſt 336.
Furthermoze if there happen any coun-
ter lye bettweene the places, as 5.0z 50,
oz 500, oz ſuch other, then ye muſt take
heede howe yee reckon in the multipli-
ing,

And

ing, as this : if ye would knowe what
is 8 tymes 16, firste lay 8 on the right
hand of your lyers, as yee did before,
then sette your finger at the counter
that lyeth alone aboue the first place
ȳ was laid for
5, and thē reck-
on that place
to be the firste
place, and then
reckon ȳ space
that is betweene the second place, and
the third place, to be your second place,
so that ye must reckon him 10 from the
place where your finger is, but this ye
must especially take heed of, that ye rec-
kon the place next aboue your finger to
double the place where your finger is.
For if ye take heede ye shall euidently
see it by reason, for 2 times 5 maketh
10, & 10 times 5 maketh 50. Thē to pro-
ceede in your question, ye must woorke
it after this maner : take vp your coun-
ter at your finger, and lay for it on the
right side of your markes 16, after that
maner lay a counter in the space next
aboue your finger, and reckon him for

10,

10, and then lay 3 counters in the place
next aboue your finger, & reckon euery
one of them fo2 2, which maketh iuste
6, then 10 and 6 maketh iust 16, as the
figure befo2e shewed. When yee haue
so doone, then take away your fynger,
and fo2 euery one of the 3 counters that
lyeth in the first place on the right side,
lay 16 on the leaft syde, and then take
them of the right syde away, and yee
shal see that the number shall come iust
to 128, as the example befo2e shewed.
In this wise yee must reckon all coun-
ters that lyeth in the spaces, if the mul-
tiplication shall be troly made.

¶ An other example.

For to knowe how many groates be
in 4563 nobles.
Firste yee shall
set down the lesse
number that is
the number that
yee shall multi-
plie, as this fy-
gure following
playnely heere
sheweth,

Now
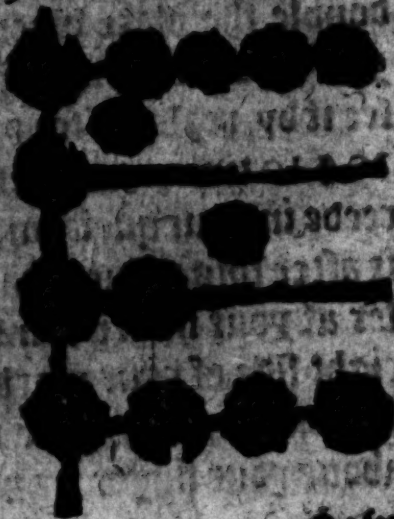
Now for to make of thefe nobles groces, ye muſt multiply them with 20 for 20 groates make a noble. Now for to multiply this number euermoꝛe, yee muſt lay down the number that ye will multiply at y right ſide of your markes, and ſet your finger againſt the marke that ye begyn at, for your finger ſhalbe a remembꝛaunce to you, for that place where your finger ſtandeth, is the firſt place, & counteth all the places vnderneath him.

Now for to make groates of theſe 4563 nobles, firſt ye ſhall ſet your finger againſt the fourth lyer, and take vp one of the foure counters that lyeth againſt the ſayd fourth lyer, and lay two counters beſide the next lyer aboue that where your finger ſtandeth, for that is the ſeconde place from your finger, and the two counters ſo layd, ſtandeth for 20, that is one noble, and like as ye haue done with this one counter, ſo ſhall ye doo with the other following.

Then take vp the counter that lyeth betweene the third and the fourth lyer, and lay two counters in the next ſpace aboue

aboue that, and that is also 2 0, oʒ elſe
ye may take it vp and laye one counter
beſide ẏ ſecond lyer, foʒ the place where
your finger ſtandeth, and that is also 2 0,
Then take vp the counter that lieth be-
twixt the ſecond ꝉ the third lier, and lay
2 in the next ſpace aboue that, then take
vp the counter that lyeth beſide the ſe-
cond lyer, and lay 2 counters beſide the
next lyer aboue that ſame. Then ſette
your finger againſt the firſt lyer, ꝉ take
vp one of the 3 counters, and lay 2 coun-
ters foʒ it beſide the next lyer. aboue
that, and as ye haue done with that, ſo
muſt ye do with the 2, and then ye ſhall
find ẏ 4563
nobles, ma-
keth 91260
grotes, and
ſtandeth as
this exam-
ple, ſhew-
eth. And as
ye ſe theſe
foʒeſaid ex-
amples, of
multiplica-
tion,
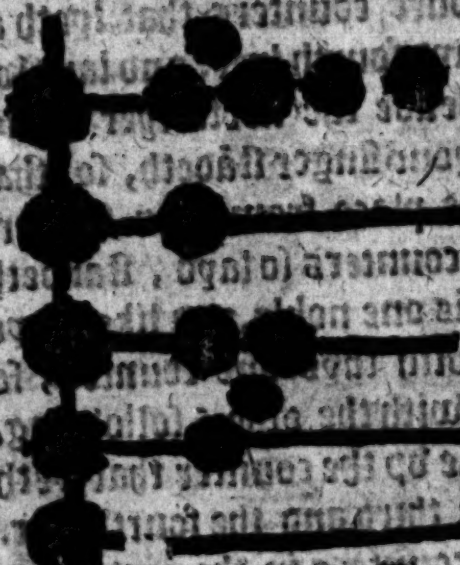
tion, so shall yee doo with all other of multiplication.

Will ye knowe or proue whether you haue multiplied well or not, then deuide the groates, that is, 91260, by 20, and if the summe come to stande as it was before, then haue yee multiplyed well. And thus alway yee may make your proofe vpon all manner of multiplicatours.

Of Diuision.

Diuision is to deuide a summe that rowes an other summe, and in this diuision must be knowne two numbers, that is the number that ye will deuide, and the number whereby yee will deuide it, as to knowe howe many times ye may haue a small number out of a groate, as by example. If ye will deuide 336, by 14 as in this ensample hereafter. I will lay 336 on the righte hand of your lyers, and then set your fynger at the highest place where any counter lyeth, for as I shewed you before that vanneth all the other places beneath, so that then there as your finger is, is the fyrste place. And then

looke

looke if ye may take 14 from that place,
which ye can not doo, for euery counter
standeth but for one, because your fin=
ger is there, therefore ye must remoue
your finger to the nexte place beneath
where the other 3 counters lie, and then
looke if ye may take 14 from that place
which ye may doo right well, for these
3 counters at your finger standeth but
for 3, and the other 3 counters aboue
standeth for 10, and then see how many
times 14 ye may haue out of 33 and so
many counters yee must laye on the o=
ther side iust against your finger, that
is to saye, yee may haue 28 out of 33
that is two times 14 out of 33, ¢ there=
fore ye must take vp 28, and lay 2 coun=
ters on the other side agaynst your fin=
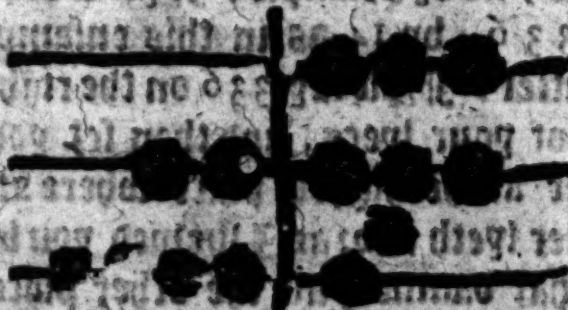
ger, then can ye haue 14 no more, then
remoue your finger to ÿ place beneath,
and

and then reckon that place at your fin-
ger to be the first place, as yee did be-
fore, and then looke howe many times
ye may haue 14 from that place, which
ye cannot, for that counter at your fin-
ger ſtandeth but for 1, and the other in
the ſpace aboue ſtandeth but for 10, and
that in all is but 11, therefore yee muſt
remoue your finger to the next place
beneath, and then yee ſhal ſee that that
number is 56, out of the which ye may
well take out 4 times 14, which ma-
keth iuſt 56 : therfore ye muſt take vp
56, and lay 4 counters on the other ſide
againſt your finger, & then take awaie
your finger, and yee ſhall ſee that that
number that yee haue layde on the left
ſide of your markes, commeth iuſt to
24, as the example before ſhewed, and
then yee haue your queſtion ſoiled. For
if yee deuide 336 by 14, it commeth iuſt
to 24, for 24 times 14, maketh iuſt 336
as I haue ſhewed you before in the rule
of multiplication. And likewiſe as yee
haue deuided this number yee may doe
with all other numbers. And if ye will
proue whether ye haue well deuided or

not, take the number that commeth of
your diuision, and multiplie it with the
small number, that is your diuisor, and
adde that remayneth thereto if there be
any, and then it will come iuste to the
great number that was the number to
be deuided. And likewise if ye wil proue
whether ye haue truly multiplied or no,
take the great number that commeth of
your multiplication, and deuide him by
the number that is to be multiplied, and
it will come iuste to the thirde number
that was your multiplier.

If ye desire to
know how ma-
ny grotes bee in
7999d pence, ye
must first sette
downe all your
pence, as ye see
in this figure, &
then ye shall de-
uide them with
4, for 4 d. ma-
keth a grote. Nowe to the operation
thereof, when that yee haue set downe
your pence, as the figure aboue them-
eth,

eth, then sette your finger at the high-
est counter, and see if yee may haue 4
from that place, which yee cannot for
there lyeth but one, and it standeth but
for one, because your finger standeth
there, therefore ye shall remooue your
finger, and set it agaynst the fift lyer, to
see if you may take away 4, the which
ye may doe, for ther lieth 7. Now your
finger standeth agaynst the fifte lyer,
therefore yee shall take vp the counter
that lyeth in the next space aboue your
finger, for that counter is 5, if ye should
take vp but 4, therefore ye shall take it
vp and laye it besides the fift lyer of the
right side, and laye one on the left side
also beside the fift lyer, then see if you
can haue 4 any more from that place,
the which ye cannot, therefore remoue
your finger, & set it agaynst the fourth
lyer) and then see howe many tymes 4
yee may take out of 36, ye may haue 9
tymes 4, and for this 9 times 4 ye shall
lay one counter in the space betweene
the fourth and fyft lyers, and 4 beside
the fourth lyer, and that maketh 6.
And as you haue doone with these, so

130   shall

that ye do with ...
all other folow...
... when ye ...
haue ... for the ...
... worke ...
row shalb fynde ... for
the 79998 pence ...
make ... the ...
greater ...
... Danielle and ...
therfore yee shall reade and
that is to ... ¶ The profe ... bone your
... If ye wil proue whether ye haue be-
... knelleth not, then multiplie the
grotes ... 4 ... maketh grotes
and if the sum come to ... stand as it did
before, then ye haue deuided ... also

Item when ye haue any summe with
pence if there remainet ... any thing ...
in pence and ... if ye deuide by shillings,
if there remainet ... them this shil-
linges, And as ye haue don with the se-
fore written examples, so may yee doo
with all other.

The golden rule.

R Egula aurea is called, the Golden
rule, for lyke as gold passeth all o-
ther

ther mettall, so this rule passeth all o-
ther rules in Agrim. And to the ope-
ration of this rule must alwaies be no-
ted three thinges or three numbers, of
the which two of them must be like of
names and of kind, that is to witte, the
first and the third number, & alwayes
yee shall multiply the seconde number
with the third, & that that commeth of
the multiplication is the number to bee
deuided by the first number that is ge-
nerall byuisor, and the quotient of the
byuisor sheweth a number of soluepon
of name and kinde of the middle num-
bers, as in these examples following
shall appeare.

If a man byeth 40 egs for 20 pence,
how many for 12 pence? If ye wil soile
this question, yee must multiply the se-
cond and the thirde number together,
and the product or the sum that com-
meth of that multiplication, yee shall
deuide by the first number, lyke as
here is shewed in this example. When
ye buy 40 egs for 20 pence, what shall
one pay for 12 egs? Ye shall multiplye
20 with 12, commeth to 240, the which

ye ſhall deuide with 49 commeth to 8
pence, and ſo much ſhall yee pay for the
12 egges. And thus ye may do withall
other ſuch queſtions.

¶ An other queſtion.

Item a 100 apples coſt 12 pence, what
ſhall one pay for 87? Yee that multiply
12 with 87, commeth 1044, the which
ye ſhall deuide with a 100, commeth 10
pence $\frac{44}{100}$ part of a.d. for the 87 apples.

Will ye knowe how many farthings
that the 44 hundreth part of a peny is
worth, then multiply 44 with as many
4 cometh 176 the which ye ſhall deuide
with a 100, commeth 1 farthing, & $\frac{67}{100}$
part of a farthing.

Item the pound of wax coſt 2.li, 5 s.
6.d. 9 mites, what ſhall coſt b 2 li. For
to ſoyle this queſtion and ſuch other
lyke: firſt ye muſt make of poundes,
ſhyllinges, and adde thereto the odde 5
s. the which ſtand in this queſtion, and
they come together to 45.s. then make
of the ſhyllings pence, and adde there
to the odde 6 pence that ſtandeth in the
queſtion

queſtion, cōmeth to 5 4 6.d. then make
of the pence mites, and 24 mites is a
peny, & thereto adde the odde 9 mites
that ſtandeth in the queſtion, commeth
together to 13 1 1 mytes and that is the
totall ſumme of all the poundes, ſhyl-
linges, pence & mites together. Nowe
make it after the rule & ſay: 165 pound
of ware coſt 13 13 mites, what ſhall coſt
22 pound? Fyrſt multiply the myddle-
moſt and the laſt together, that is: yee
ſhall multiply the mites with the laſt,
yᵗ is with 22, & it ſhall come to 288 4 8 6
deuide them with 165, and it ſhal come
to 17 48 mytes, and 66 part of a mite,

———————————————————

to manye mytes ſhall the 22 pounde of
ware coſt. Nowe wil ye know how ma-
ny pence that the fore-written mytes
make then deuide them with 24, for
24 mites maketh 1 peny. Then will ye
know how manye ſhillinges that the
pence make, then deuide them with 12
for 12.d. maketh a s. And thus dooing
yee ſhall finde that the 22. li. of ware
ſhall coſt 6 ſhillings, 20 mites and 66
part of 1 mite, and it is done.　169

Item when ther standeth 1 in the first place. As 1 goose cost 3.d. what shall cost 28? Ye shall multiply ȳ midlemost with the last, in saying: 3 times 28 is 84, so many pence cost 28 geese, ⁊ it is finished.

Item in the contrary, as when that 1 commeth in ȳ latter end, as here in this example 20 capons cost 23 pence, what shall cost 1 capon. For to sosle this question ye shall deuide the midlemost with the first, ȳ is 23 with 20 cometh 1.d ⁊ 3 part of a peny, that is to wytes ⁊ 4 | $\frac{3}{20}$ part of a mite for 1 capon.

Item 17 elts ⁊ | 1 | cost 14 nobles ⁊ 3 part of a noble, | 2 | what shall cost 32 els ⁊ | 2 | part. For to soyle this question and | 4 | such lyke cost, ye must breake the first and last broken together, crosse, wise in saying: 1 tymes 4 is 4, sette the 4 by 17 elles. Then say 2 times 2 is 6, set the 6 by the 32 elles. Then multplie both the numbers of your fractions together, in saying 4 tymes 2 is 8, the which ye shall set vnder 4 and 6 then it standeth thus, as in the rule of three, if 17 els ⁊ | 4 | part of an elle coste 14 nobles, | 8 | and | 1 | parte of a noble, what

what shal cost 32| 3 |elle, 6| 4 | parte of
an elle. Fyrst multiply the | 8 |first hole
number with the neathermost of hys
broken, that is 17 with 8 commeth 136,
and thereto ye shall ad the 4 that stan-
deth aboue 8 commeth 140, the which
ye shall multiplie with the 3 that stan-
deth vnder the second broken, commeth
420, that is your deuisor, then multi-
plie 14 with the 3 that standeth vnder
1, and adde that 1 thereto commeth 43,
that is your multiplicatour, then mul-
tiplie 32 with the neathermost fygure
of his broken, that is with 8, and adde
thereto the same 6 that standeth aboue
the same 8 commeth 262. Nowe set it
in the rule of thre in saying, 420
ells cost 43 nobles, what shall cost 892,
multiply the second with the thirde and
then deuide that that commeth of that
multiplication with the first, and ye
shall finde that the 3 2 elles of cloath cost
29 nobles 19 d 34 mytes, and 130 part
of a myte.

Item when that there standeth at
the beginning a whole number with a
broken, and in the seconde thirde place
in   no

no broken, as here : 3 6 elles, and 1 cost
8 li. what shall cost 16 elles.

For to soyle this questiõ, ye must mul-
tiply the firste whole number with the
vndermost figure of his broken, that
is 36 with 2. and adde the 1 therto that
standeth aboue 2 comming 73. and that
is your deuisor, then multiply 8. li. also
with the vndermost fygure of the bro-
ken that is to wit with 2. & it commeth
to 16. then multiply 16 with 16, cõmeth
159. the which ye shal deuide with 37 &
it wil shew you that there shalbe to pay
for the foresayd cloath 3 pound, 10 shyl-
lings, one peny, 17 mites, and 33 part
of a mite.

Item when there standeth in the first
or in the second no broken number, but
in the latter end a whole nũber with a
broken, as here 14 ounces of graine cost
14 s. what for 9 ounces of grayne, and
one therde. For to know this yee shall
multiplye the first 14 with 3. that stan-
doth vnder the broken, commeth to 42.
that is your deuisor, then multiplye 9
with 3. and adde that 1 thereto that
standeth aboue 3, commeth to 28, then
set

set it thus 42 gyueth 14; what gyueth
28. Make it forth after the rule, and yee
shall finde that there is to paye 9 shyl-
lings 4 pence for the 8 ounces of graine
and one thyrd part.

Item when that yee finde neyther at
the beginning nor at the latter end no
broken number, but in the middest a
whole with a broken as heere, A man
bought 48 sheep for 64 crownes and 2
what shall one pay for 18 sheepe,
For to soile this question ye must mul-
tiply 48 with 4, which commeth to 192
that is your denisor, then multiplye 64
with 4, and adde thereto the 2 that
standeth aboue 4 commeth to 258, the
which ye shal multiply with 18 cōmeth
to 4644, the which ye shall deuide with
192, And thus yee shall fynde that yee
must pay for the 18 sheepe 24 crowns,
4 styuers and 36 mites Brabans.

Item when ye finde no broken at the
begynning, but in the second and thyrd
one whole with a broken. As 7 elles for
6 pound 1 what shal cost 16 elles
4

For to soyle this question ye must mul-
tiply

tiplie the two vndermoſt broken nom-
bers together, in ſaying 1 ⅓ tymes 4 is
12, the which ye ſhall multiply with 7,
cōmeth to 84 that is the diuiſor. When
multiply each with this broken cōmeth
as 7 49 the which ye ſhall multiply one
with the other cōmeth 1227, the which
ye ſhal deuide with 84 and the ſoluciō
ſhall be to pay 14 li. 12 ſ. 18 d.

When that ye finde at the beginning
and ẙ middeſt a hole with a broken, and
at the latter ende ſtanding a hole with-
but a broken, and 9 elles and 5 to ẙ all.

8 what ſhall coſt 1 5 elles ẙ multiplieth
with 4, & adde thereto 3 cōmeth 59, the
which ye ſhal multiply with 8 cōmmeth
9 12, that is your diuiſor, then multiplie
5 with 8, & adde thereis the 5 that ſtan-
deth aboue 8, cōmeth 45, the which ye
ſhall multiply with 4 that ſtandeth vn-
der the firſt broken, cōmeth 180. Now
ſette it in the rule of thrée in ſaying: 9 12
giueth 180, what giuet ẙ 45, make it af-
ter the rule, and it cōmmeth to 8 li. 13 ſ.
22 mytes, and 19 of a myte.

The rule of company.

There be 3 marchauntes or compa=
nions, the which lay together their mo=
ney in marchaundise, & each to win af=
ter his inlaying. The first laide in 170
crownes, ý second 60 crounes, the third
40 crownes & with it they haue won 50
crownes & all costes, I aske how much
that each shall haue after his laping.
Nowe for to soyle this question and all
such other rules of company, yee must
make of theyr money that they haue
layd in a totall summe, commeth to 250
nowe say 250 giueth 50, what gyueth
150, make it after the rule of three, and
it commeth to the first man 30 crownes
wynning. Now for to knowe what the
second hath wonne ye shall say: 250 gy=
ueth 50, what giueth 60, make it after
the rule and yee shall finde that the se=
cond hath wonne 12 crownes. Will ye
know what the third hath, then say 25.
giueth 50 what giueth 40, make it af=
ter the rule, and yee shall finde that the
third hath won 8 crownes. And thus
shall ye do in al other rules of company.

                    N.   The

¶ The rule of company with
time.

Three fellowes put marchaundyse
together, whereof the fyrste layeth
in 50 crownes for 4 monethes. The se-
cond 80 crownes for 2 monethes. The
third 100 crownes for 5 monethes, and
withall this money they haue wonne 6
crownes beside their coffes paid. Now
I demaunde what eache hath wonne
with his money. For to knowe this, ye
must multiply each mans money with
his time, that is for the first 50 with 4
cometh 200 set that as though he hath
layde in so much, for the seconde mul-
tiplie 80 with 2 commeth 160 set that
also as though he had layde in so much.
Now adde the 3 numbers together, and
then make it after the rule of company
and then shall ye finde what each hath
wonne with his company.

¶ The rule of bartering.

Two marchaunt men will chaunge
their wares together, and the one hath
a fine black cloath the which is 43 elles
long, and he will giue the elle no lesse
then

then 18 pence. The other Marchaunt
hath pepper, and he will sell the pounde
no lesse then 15.d. Nowe I demaunde
how many poundes of pepper the firste
marchaunt shall haue for his 45 elles of
cloth. For to sople this question ye shall
lay 13 giueth 45, what giueth 18, make
it after the rule of 3 & ye shall finde, that
the first shal haue for his cloth 59 pound
of pepper, 9 ounces, 12 englishe and 4
part of an english.

¶ Of a Watte.

A Watte runneth in the field & other
runneth in one minute (there be 60 in
an houre) 12 roddes of grounde. And a
Grayhound being her enemy, foloweth
her and other runneth in one mynute 15
roddes of grounde. But by the Gray-
hounde began to runne, the Hare had
run 200 roddes of land. Nowe is to be
demaunded in how many minutes and
howe many roddes of lande was the
Hare taken. For to sople this question
and such like, ye shall subtract the lesse
running out of the more, that is 12 out
of 15, and there remayneth 3, and ther-
with ye shall deuide the space that the

Hare

Hare hath run before the Grayhounde began to runne, that is 20 roddes. And in so dooing ye shal finde that the Grayhound ouertoke the Hare in the 66 minutes, and $\frac{2}{3}$ partes of a minute, that is one houre and 6 minute, and $\frac{2}{3}$ of a minute. Wil yee knowe howe many roddes that the Grayhounde did run, or that he tooke the Hare, then multyply 66 and $\frac{2}{3}$ with 15, commeth to $\frac{3000}{3}$ the which ye shal deuide with 3 commeth 1000 whole, so many roddes dyd the hound run or that he tooke the Hare.

¶ The rule of 2 felowes.

Two fellowes went togeather out of a towne, and the one goeth euery day 12 miles, and the other goeth the first day but one myle, & the second day 2 myles, the thirde day 3 myles, and so foorth euery day one myle more. Now I demaunde in howe many dayes, and howe many myles went he or that hee ouertooke his fellow. For to soyle this question, ye shall double the myles of him that went euery daye lyke much, that

that is 12, and 2 times 12 is 24, thereof
yee shall subtract the one myle that ye o-
ther goeth the first daye, and there res-
teth 23, vpon the same daye was the
first man ouertaken of his companion.
Will ye know in how many mile, then
multiply 23 with 12 cometh 276, for so
many miles wēt he or he ouertook him.

   Item there is a fellowe gone out of
London towarde Salysburye, and he
goeth euery day 8 myles, and an other
fellow commeth from Salysburye, to-
ward London, and goeth euerye daye
but 6 myle. Now I demaunde in howe
many dayes shall they two mete. Now
for to soyle this question and suche o-
ther like: First ye must adde togeather
the number of the myles that they goe
both in one day, that is 8 and 6 maketh
14, therewith deuide the lengthe from
the one towne to the other, that is 60
myles, and in this doing ye shall synde
that they goe 4 dayes and $\frac{4}{4}$ parte of a
day or they meete.

   A Lord had hyred a woorkeman, the
which he gaue euery day whan that he
wrought 5 groates, and when that hee

<center>N 3</center> plateth

playeth he spendeth every day 4 grotes
and when that it came to the ende of ÿ
100 dayes, the Lorde, and the woorke-
man reckned together, for the woorke-
man had yet receyued no money of the
Lorde, and when they had reckoned,
they came iust out, for the woorkeman
had spent as much as hee had wonne.
Nowe I demaunde howe many daies
went he playing, and how many dayes
did he woorke in that 100 dayes. For to
soyle this question, ye must adde toge-
ther both the summes of money, that
is 5 groates and 4 grotes, commeth to
9 groates, that is your diuisor. Now for
to know how many dayes that he had
wrought, saye thus : 9 gyueth me 4,
what gyueth me 100, make it after the
rule of thre, & ye shall finde that he had
wroughte 44 dayes and 4/9 of a daye.

Now will ye know howe many dayes
that he playeth, then saye 9 gyueth 5,
what giueth 100, make it after the rule
and it commeth 55 daies and 5/9 of a day,

Of

Of a Man that lay in his death bed.

Item a man that laye in his death-
bed called his childzen to him and saide
vnto his eldest sonne, goe to the chaun-
ger where my money standeth, and tell
him that he giue you money 1 pounde
and of that ỹ remayneth yet the tenthe
part. Then he saith to his second sonne
go to the chaunger as your bzother did
and tell him that he giue you 2 pound,
and of that ỹ remaineth yet the tenth
part. And to the other he said that they
should doo as their bzothers had done,
but euer the one should bzing a pound
moze then the other. And he sayde to
the youngest that he should go and fetch
all the money that his bzothers hath
left there. And when this is doone each
Childe bzoughte lyke muche money
home. Now I demaunde howe many
childzen were there, and howe much
mony that each child bzought from the
chaunger, and how much money was
at the chaungers? Will ye know this,
then substract the teller that standeth
in

in the broken number, that is 1 from 10
rest 9, for so many children had the same
man. And so many poundes starlyng
did euery chylde fetch from the chaun=
ger. Nowe will ye knowe howe much
money that there was at the chaunger,
then multiplie 9 with 9 commeth 81 so
many poundes starlyng was at the
chaungers.

¶ A goldsmith had a peece of 15 oun=
ces and in the same peece is 6 ounces
of gold 5 ounces of syluer, and 4 oun=
ces of copper. To this goldsmyth com=
meth a man or a woman ẏ which will
haue made of this peece a kettell of 9
ounces. Nowe I demaund how much
golde and syluer and copper shall be in
this kettell? If ye will soyle this questi=
on, then saye 15 gyueth 9, what giueth
5 ounces, make it after the rule of three
and it commeth 3 ounces of gold and $\frac{2}{5}$
part of an ounce. Wil ye know how
much siluer, then say: 15 giueth 9 what
giueth 5 ounces, make it after the rule
and it commeth to 3 ounces of syluer.
Now will ye know how much copper,
then say 15 ounces giueth 9, what gy=
<div align="right">ueth</div>

neth 4, make it after the rule and it cō=
meth 2 ounces $\frac{3}{3}$ part of an ounce, & it
is done.

A man hath a golden crowne of 34
ſtyuers, and a Phillipps gilden of 45
ſtiuers, and a ducate of 28 ſtiuers, and
with this money he goeth to the chaun=
ger, and will haue foꝛ it negehmanne=
kins crownes of 6 mytes. Now J de=
maund how much that he ſhall receyue
of ech foꝛ ẏ afoꝛeſayd gold, and receiue
of each like much. Foꝛ to ſoyle this que=
ſtion and ſuch like, then make of all the
great mony that he will chaunge mites
foꝛ that is the leaſte coyne that he will
haue, and cōmeth to 9072 mites, then
looke howe manye mytes that all the
ſmall pence be woꝛth, that he wil haue,
that is 25. Nowe deuide the great ſum
of the mytes, that is to wit 9072 with
25, and ye ſhall finde that he muſt haue
of each 3 62, and $\frac{22}{25}$ and it is done.

Of foure Carpenters.

Foure Carpenters wil make a houſe
whereof the firſte taketh vppon him to
make it himſelfe alone in a yeare. The
<div align="right">ſecond</div>

second will make it in two yeres. The
third will make it in 3 yeeres. And the
fourth in 4 yeeres. Nowe I demaunde
if all these 4 wrought vpon that house.
in what space would they 4 make that
house. Wil ye know that? then say: the
first would make it in one yeere, that
were 12 tymes in 12 yeers. The second
in 2 yere, that were 9 times in 12 yere.
The third in three yeere, that were 4
tymes in 12 yeere. And the fourth in
foure yere that were three tymes in 12
yeere. Now summe them all together,
that is 12, 6. 4 3. commeth to 25, there-
with deuide 12 cōmeth 12 part of a yere

Now if ye wil know how many dayes
that it is, then multiply 12 with 365 for
so many dayes be in a yeere, and that
that cōmeth of that multiplication De-
uide it by 25 commeth to 175 dayes 5 5
part of a day.

The rule of false positions, by the which
al maner of difficule and hard questions
may easily bee dissolued, and first of
one false position.

Now

NOw shall yee knowe howe by false positions o₂ coniectures one o₂ two yee shall fynde out the very truth of that the which yee seeke fo₂, and fy₂ste yee shall vnderstande howe to fynde the trueth of a question p₂opo= sed by one coniecture o₂ position.

When that anye question is put foo₂th vnto you to be assoyled, of the which one parte is knowen and the other vnknowen. Aunswer to that question by and by, with your selfe at all aduen= ture, and then consider with your selfe whether ye haue made right aunswer o₂ no, if not, looke what p₂opo₂tion is betweene your coniecture and that y⁰ followeth of your coniecture, and the same p₂opo₂tion is betwcene the thing knowen and y⁰ pertaineth vnto the selfe thing beeing yet vnknowen. As by er= ample, ye shall mo₂e plainely perceiue.

¶ A certaine Wayfaring man com= ming by the way, found so many crow= nes, that the seconde, the thy₂de, and the fourth part of them added together made 50. I demaund what summe hee found. To make aunswer to this ques=

tion by one position, imagine some
somme that hath these parts in it, ẙ is
to say, a seconde, a thirde, and a fourth
part: and be it 12, whose seconde part or
halfe is 6, the thirde part 4, the fourth
parte 2, which all added together 6.4.3.
make 13, but the summe that he found,
the seconde, thirde, and the fourth of it
made 50, wherefore 12 is not the sum
he found, therfore this position is false
and yet by this false yee shall come to
the lyghte of truth, by the helpe of the
rule of three. For looke what proportyon is between the second, the thyrde, ꝑ
the fourth parte of 12 added together,
the which maketh 13, and 12 whose
partes there be, the same proportyon
is between 50, which is the second, the
third and the fourth parte added togeather of the number unknowen, and the
same unknowen number it selfe. Then
say thus with thy selfe: if 13 which contayneth the foresayde partes in them,
come of 12, of whom come 50, then set
them thus: 13.12.50. then by the rule
of three multiplye 50 by 12, and thereof
commeth 600, deuyde the same by the

fyrſt number 13, and in the quocient
thou ſhalt finde 44 $\frac{2}{2}$ the whych was

the ſumme of the crownes the which
a man founde: of the which ſumme
the halfe part is 23 $\frac{1}{2}$ the thyrd part is
15. 13 the fourth parte 11 13 the which
partes added togeather make iuſte 50,
Thus thou ſeeſt howe that by one falſe
poſition or coniecture with the helpe
of the rule of three, thys queſtion is
ſoone diſſolued.

¶ An other queſtion.
Finde a number in the which 5 is 3
that is to ſay, two third partes of him:
Anſwer. Imagine any number ye lyſt,
that hath thirdes in it, as be it 6, then
looke what is the thirde part of 6, that
is 2, then two of this thyrde parte of 6
maketh 4, wherefore this poſition is
falſe, yet by this falſe poſition with the
helpe of the rule of three, thou ſhalt
fynde out the trueth, after this manner
If 4 be the $\frac{2}{3}$ partes of 6, to who is 5 $\frac{2}{3}$

partes, ſearch by the rule of three, and
thou

thou shalt finde it 7 $\frac{1}{3}$

¶ An other question.

What number is that, in the which after that the thirde, the fourth and the fifte parte be deducted out of it, there shall yet remayne 24? Aunswer. Imagin anye number that hath a thyrde, a fourth, & a fifte in him. As for example say it is 60, then substract out of hym hys third his fourth, and his fift parte, and thou shalte finde remayne but 13. Lo how much thou hast myssed, thou shouldest haue founde such a number in the which after the aforesaide partes were subtracted, should remaine 24, & here remaineth but 13, yet proue by the rule of three, & thou shalte finde the true number. If 13 remaine after the subtraction of the foresayde partes in 60, what number is that out of the which after lyke subtraction of hys thyrde, fourth, and fift part shall remayne 24, proue by the rule & thou shalt finde it

110 10 whose third part is 36 12, & fourth

  13   9   2   13

27 is 13 the fift 22 3 which all added

togeather

together make 86 10 the which reduc-

$$\frac{10}{110}\quad 1\frac{1}{3}$$

ted out of 110 1⅓ shall remaine 24.
These and diuers other questions be-
fore rehearsed by the same craste, one
false positiō may son be assoyled. Now
will I shew you how to dissolue all ma-
ner of questions, howe difficult so euer
they be by two false positions : For by
one false position ye shall not answer to
al maner of questions, but two false po-
sitions, what soeuer questions it be, it
may soone haue solution.

¶ Howe to aunswere by two
false opinions.

IF numerable questions doo chaunce
in numbers, the which though they
can not be dissolued by one position or
coniecture, yet shall it not mysse but be
assoiled by two positions: in the which
maner yee must diligentlye note howe
farre aboue the truth or vnder both po-
sitions do fall. For by the obseruation
of two coniectures howe neere they be
to the trueth, and the difference of the
errours which ensue of the positions,

the

the veritie commeth to light, whych
may be doone 2 waies: one way by the
rule of both moze of both lesse. Ano-
ther waye by the rule of the one moze
and the other lesse.

¶ When both positions be moze then
the veritye oz both lesse, then subduct
the lesse errour out of the moze errour,
and that that remayneth shalbe the de-
nisoz, then multiply the first errour by
the seconde position and the latter er-
rour by the first position, and then these
two numbers beeing multiplyed, de-
duct the lesse out of the moze, and that
that remayneth deuidz it by the foze-
sayd diuisoz and the quocient shal shew
the veritie.   Example.

¶ Three marchauntes deuided a 109
crownes moze then the firste, and the
third 4 moe thē the second: I demaund
now how many crownes each of them
receaued? Answer. First make sayple
Andzowes crosse as yee see heereafter,
then coniecture what yee list, as foz ex-
ample. Say the first had 33, and then
must the seconde haue 36, and the third
marchant 60, which summe gathered
together

together maketh 100. but ye had but
100. to deuise, wherefore ye haue missed,
and your position redowneth to more
then the very summe by 9. which came
of your first position 33. wherefore set
the first position 33 at the vpper end of
the crosse on the left side of the crosse,
and the error which hath ensued of that
at the foote of the crosse on the same side,
as ye sée in the example. And for because
that this coniecture came to more then
the truth, therefore set this letter M. in
the space betwene the vpper end of the
crosse and the nether. And for as much
as in this first coniecture ye haue erred
thus much, coniect againe and suppose
that the first Merchant had 31. then
will the second haue 34 the third 38 all
these collect make 103 so that now ye
haue erred againe, your position being
to much, so that your errour is 3 and
because that this second position is
more then the veritie as the first was:
set the position 31 at the vpper end of
the crosse on the right side, and the error
the foote of the crosse on the same side,
and put this letter M. betwéen the space

<div align="center">M</div>

<div align="right">to</div>

to signifie moze. Both these positions
then be moze then the veritie wherefoze
accozding to the rule first subduce the
lesse erroz 3 at the fote of the right side
of the crosse, from the greater erroz at
the fote of the leftside of the same crosse,
remaineth 6 to be set in the space betwen
both the fete as ye se which shall be the
deuisoz. Then accozding to the rule,
multiply the first position which is 33
by the erroz of the second position
which is 2 and thereof commeth 99, then
the second position 31 by the erroz 9 of
the first position, and thereof commeth
279, then deduct the lesse sum 99 out of
this moze sum 279 remaineth 180. de
uide this sum by the difference of the er-
rours which is the true position. Foz the
first man hauing 50, the second must
haue 33, and third 37, which all set to-
gether make iust 100. Thus wonderful-
craftily by these ii false positions, the
true and iust position is brought out
right.

The Example.

$$99 \qquad 180 \qquad 279$$

```
        33                 31
    36  M          M   34
        40                 38
        99                 3
```

An example when both positions come to lesse then the verity.

VVhen both positions come to lesse then the verity: the which is all one matter with the other, as ye shall perceiue by the same example againe. As suppose ye had coniected that the first should receiued 27, then must the second receiue 30, and the third 34, which added together make 91, which is lesse by 9 then the summe 100, which should be diuided among them. Set then this first false position 27 at the vpper end of the crosse on the same side, and the error ensuing of that, at the foote of the same crosse on the same side. And for becuse

that

ons adde them together also, then de-
uide this added number by the added er-
rors, the diuisor aforesaide, and the quo-
cient sheweth the true position.

The example.

We will take the first case againe, and
suppose that the first Marchant haue re-
ceiued 33 Crownes, then must the se-
cond receiue 35 and the third 39, where-
fore that position is false and too much by
6. set the position 33 at the vpper end
of the crosse, and the error 6 at the nea-
ther end of the crosse: In the space be-
twéen, ye shall set this letter M. for
more. And for because that this position
hath exceeded the verity, content againe
lesse, and suppose that the first haue recei-
ned 20, then must the second receiue 22,
the third 39, all added together maketh
97, which is lesse then the veritie by 3,
wherfore set this false position 29 at the
vpper end of the right side of the crosse:
and the error 3 at the neither foote of the
crosse: In the space betwéen set this let-
ter L for lesse. Of these two false positi-
ons the one is more then the trueth, the

other

Certaine Rules.

ther is leſſe, wherefore accozding to the rule adde both the erroz 6 and 3 together, that maketh 9 foz the diuiſoz: then multiply the firſt poſition 32 by the ſecond erroz 3 which maketh 96, and the ſecond poſition 29 by the firſt erroz 6, which maketh 174, and that that enſueth of both theſe multiplications adde it together, and it maketh 270, diuide this added number by the added errozs, which was 9, and the quotient ſhall be 30, which is the true poſition, as you may ſe by this example.

69	270	174
	30	

32		29
35		32
36M	L	36
6		3

6

Thus may ye diſſolue all other matter of queſtions, which haue béen ſet befoze in this Boke, without great pains of ſtudy.

FINIS.